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# Sustainability in business: A study on marketers' attitudes towards sustainable practices in the B2B environment

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# SUSTAINABILITY IN BUSINESS: A STUDY ON MARKETERS' ATTITUDES TOWARDS SUSTAINABLE PRACTICES IN THE B2B ENVIRONMENT

By

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# Declaration of Authorship

This thesis is the candidate's own work and contains no material which has been accepted for the award of any degree or diploma in any other institution.

To the best of the candidate's knowledge, the thesis/dissertation contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

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# Abstract

Green marketing has an important role to play in supporting sustainable development. Marketers have a vital responsibility to communicate on relevant products and services, creating awareness on environmental issues among consumers. They could also play a role in promoting sustainable consumption. However, previous research has also suggested that, as yet, green marketing and indeed marketing's broader influence on attitudes towards sustainability, are yet to be fully mobilised. Considering the important role of marketers in achieving sustainable development, this research focuses on marketers and studying what the attitude of marketers regarding sustainability and green marketing actually is. Additionally, given the extensive research on consumer markets, this research contributes to the less studied context of industrial business to business (B2B) marketing. Also, given the inadequate attention on green marketing in developing countries, this research focused on marketers from India and compared their attitudes with marketers from Australia, a developed country.

The research used Q methodology, including Q sorts, Q analysis and interpretation, to elicit and analyse the attitudes and viewpoints of marketers towards sustainability and green marketing. The research revealed B2B marketers have three predominant attitudes towards green marketing – those who show an interest in green marketing and actively use it, those who show an interest in green marketing, but are unable to use it in practice and those who are not interested in green marketing. The findings revealed several constraints which prevent marketers from using green marketing. The findings also revealed various similarities attitudes of marketers from developing and developed countries, such as the existence of highly interested marketers. At the same time, some differences were also evident where marketers with altruistic values were found only from the developing country and was absent in the marketers from the developed country.

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# Chapter 1 Introduction

Green marketing has an important role to play in promoting sustainable development. Marketers have a vital responsibility for communicating and creating awareness on environmental issues and also in promoting sustainable consumption. In this dissertation, the attitudes towards sustainability and green marketing among marketing professionals working in a business to business (B2B) environment is studied using Stephenson's Q methodology (Stephenson, 1936). The attitudes of marketers are elicited by focusing on marketers from a developed country and marketers from a developing country. The similarities and differences in their attitudes are also studied. This introductory chapter provides an overview of the investigation conducted in this research.

## 1.1 Background to the research

The environmental footprint of a business and its products has been a subject of much interest since the late 1960s, just as environmental degradation, increased consumption due to population explosion and social and economic equality started to emerge as important public policy issues (Carson, 1962; Meadows, 1972; Sohn, 1973). As environmental and socio-economic issues became more prescient over time, the need for sustainable development gained momentum and emerged as a new paradigm for global development (Brundtland, 1987).

The most cited definition of sustainable development is that it is a "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987, p. 54). However, as the world population has doubled in the last 50 years and is continuing to increase exponentially (census.gov, 2014), there is a huge concern on the unsustainable stresses on environmental ecosystems due to the rising population's consumption pattern which can be beyond earth's carrying limit. It is estimated that sixty percentage of the earth's ecosystem

has been degraded since the 1960s, due to increased population and economic activity, while natural resource consumption is expected to rise to 170% of the Earth's bio-capacity by 2040 if this is unchecked (World Business Council for Sustainable Development, 2008). Consequently, our ability to maintain development within the confines of sustainability is continuing to be a global challenge.

While environment and socio-economic challenges are not new for businesses, sustainability poses a bigger challenge as interest and knowledge on the topic is growing with the emergence of sustainability as a "global megatrend" (Lubin & Esty, 2010). Consequently, various stakeholders demand better corporate and public governance to address the sustainability challenges (Kolk & Van Tulder, 2010; Orlitzky, Siegel, & Waldman, 2011).

In response to the sustainability challenges facing businesses and governments, green marketing emerged as a subset of marketing in the 1970s (Peattie, 2001b). Green marketing is defined as "the holistic management process responsible for identifying, anticipating and satisfying the needs of customers and society, in a profitable and sustainable way" (Peattie & Charter, 2003, p. 727). Now viewed as a necessary marketing strategy for both commercial and social marketers to promote the message of sustainability (Gordon, Carrigan, & Hastings, 2011; Peattie, Peattie, & Ponting, 2009), green marketing is established as an integral part of the current marketing lexicon.

The widespread reach and acceptance of various environmental and social campaigns and the emergence and promotion green products in the past few decades can be attributed to green marketing (Howell, 2011; Kaplan, 2011; Ratih, 2013). There is now greater awareness amongst consumers on sustainability issues such as greenhouse gas emissions (Dietz, Gardner, Gilligan, Stern, & Vandenbergh, 2009; Kennedy, 2010); depletion of resources (Monroe, 2003); economic inequality and issues such as food scarcity, hunger (Nelson, Kanso, & Levitt, 2007), poverty, starvation (Barber,

2013) and related issues in developing countries (Sridharan & Viswanathan, 2008; Suchdev et al., 2010; Vachani & Smith, 2007). There have also been numerous campaigns towards activities such as walking, cycling and using public transport as a sustainable alternate to using motor vehicles (Frame & Newton, 2007; Gray, 2013; International Society of Sustainability Professionals, 2008; Thøgersen, 2009).

Yet, despite such efforts over the past 40 years, green marketing is considered to have underperformed against expectations (Crane, 2000; Delmas & Burbano, 2011; Peattie & Crane, 2005; Sheth & Parvatiyar, 1995). Still, the conceptual and ethical importance of green marketing is acknowledged in the literature and is not dismissed as a fad (Kotler, 2011; Peattie & Crane, 2005; Prothero, 1998). Important sustainability issues, like climate change and resource depletion, require innovative marketing communication to raise awareness among consumers and needs marketing initiatives to promote sustainable consumption (Peattie et al., 2009; Prothero, McDonagh, & Dobscha, 2010; Prothero et al., 2011). Even recently, "promoting sustainable patterns of consumption and production" has been validated as one of the main sustainability challenges, yet reaffirmed as an essential requirement for achieving sustainable development (World Economic and Social Survey, 2013, p. vii).

Given this significance of marketing for achieving sustainability, it is evident that marketing professionals play a visible role and are central to promoting sustainable practices. Hence, the focus of this research is these marketing and sales professionals and the aim of this research is to identify the attitudes among marketers towards sustainability. This research addresses three significant gaps that emerge out of the literature. Firstly this research explores what the 'attitudes of marketers' are towards green marketing. Secondly, this research looks at how sustainability is promoted and perceived in the 'B2B context'. Lastly, the research addresses the need for green marketing research in developed country and compares and contrasts marketers' attitudes from a developing country with those from a developed

country. To date, these aspects of green marketing have remained under-researched.

## 1.2 Research significance

This research helps in addressing several significant issues which have not been properly addressed before. Firstly, much of the present literature on green marketing is concerned with consumer perceptions of sustainability. By contrast, this research, with its focus on marketers, advances on the most recent research where a shift in focus away from consumers and consumption has been identified (Chan, He, & Wang, 2012; Raghavendran, Xavier, & Israel, 2012; Sharma, Iyer, Mehrotra, & Krishnan, 2010). While there have been numerous contributions on sustainable consumption and consumer behaviour (Peattie, 2001b; Peattie & Charter, 2003; Prothero et al., 2010; Sharma et al., 2010), this research, with its focus on marketing professionals, adds a different and necessary dimension to green marketing research.

Secondly, given the importance of marketing professionals in communicating and promoting sustainable consumption among consumers (Peattie et al., 2009; Prothero et al., 2010; Prothero et al., 2011; World Economic and Social Survey, 2013), this research provides valuable insights on the opinions and viewpoints of marketers on sustainability. This can pave the way for an additional and detailed research on marketing professionals who are also consumers, but have an important responsibility of communicating sustainable development.

Thirdly, much of the current research on green marketing is focused in the business to consumer (B2C) market. However, it has been argued that there needs to be greater focus on green marketing in B2B environment (Berth, 2011), as the number of transactions and impact of sustainability issues is greater in B2B compared to B2C context (Polonsky, Brooks, Henry, &

Schweizer, 1998; Pujari, Peattie, & Wright, 2004; Rivera-Camino, 2007), and hence is the focus of this research.

Finally, there is a greater need for sustainable development in developing countries compared to developed countries. The per capita consumption of developing countries is only a fraction of that of developed countries. A country like India consumes less than 8% of the per capita energy consumption of a developed country like Australia (U.S. Energy Information Administration, 2013). However, developing countries are now emitting more overall greenhouse emissions than developed countries. With more than 80% of the world's urban population about to be based in developing countries (World Economic and Social Survey, 2013), even a small increase in per capita consumption due to increased economic activities would increase the overall consumption in developed countries exponentially due to their huge population. Yet, research on green marketing in developing countries is lacking as much of the focus has been on developed countries (Cherian & Jacob, 2012; Kirchgeorg & Winn, 2006; R. Saxena & Khandelwal, 2010; Shrikanth & Raju, 2012) and hence this research focuses on both developing and developed countries and compares the attitudes of marketers in both regions.

## 1.3 Framework and Research Question

The research framework revolves around the concept of green marketing (Kilbourne, 1998; Polonsky, 1994; Prothero, 1990). Other variations of this concept are societal marketing (Kotler & Levy, 1969; Prothero, 1990), environmental marketing (Miles & Covin, 2000), ecological marketing (Henion, 1981) and sustainable marketing (Belz, 2008; Van Dam & Apeldoorn, 1996). However, green marketing is one of the widely recognised terms and all these terminologies are implied to link marketing to sustainability (Belz, 2008; Crane, 2000; Fraj-Andrés, Martinez-Salinas, & Matute-Vallejo, 2009; Peattie, 2001b; Peattie & Crane, 2005); hence green marketing is the terminology used in this research.

Green marketing is not just about promoting green products like recycled paper or CFL and LED lamps, but also includes other aspects of marketing such as product packaging, materials or medium used for advertising, product innovation, design and modifications, communicating green attributes of products, creating awareness amongst customers and stakeholders and demarketing – the practice of demand reduction through marketing (Kotler, 2011; Polonsky, 1994; Sharma et al., 2010).

This research uses these aspects of green marketing to answer the following research question:
*What is the attitude of B2B marketers towards green marketing and does it vary between a developing and a developed country?*

To answer this question, marketing professionals working in a B2B environment were selected and their viewpoints on green marketing were elicited using Q methodology.

## 1.4 Methodology

This research uses Q methodology to gather and analyse data from marketers. Q methodology was introduced by physicist / psychologist William Stephenson in 1935 (Brown, 1993). It is

> A qualitative but statistical approach that encompasses a distinctive set of psychometric and operational principles, which provides a foundation for the systematic and rigorous study of subjectivity, a person's viewpoint, opinion, attitude, and the like (Cools, Moons, Janssens, & Wets, 2009, p. 442).

Stephenson developed Q methodology to systematically study subjectivity. It has been in use for over 75 years and has been predominantly used in studies relating to political and social sciences, but has also been identified as a novel methodology for conducting studies related to environmental and

climate research (Anable, Lane, & Kelay, 2006; Cools et al., 2009; Webler, Danielson, & Tuler, 2009) and is increasingly being used in various studies related to sustainability (Barry & Proops, 1999; Cools et al., 2009; Di Ruggero, 2011; Doody, Kearney, Barry, Moles, & O'Regan, 2009; Rajé, 2007; Van Exel & Rietveld, 2009; Van Exel, de Graaf, & Rietveld, 2011).

The principal aim of Q methodology is to uncover people's attitudes, viewpoints or opinion on a particular subject (Barry & Proops, 1999; Brown, 1980; Brown, 1993; Van Exel & de Graaf, 2005; Watts & Stenner, 2005). It is particularly suitable to study topics which have much debate (Barry & Proops, 1999) such as sustainability and green marketing where each person has their own opinion which can be contrasting. Q methodology helps in eliciting these different attitudes and viewpoints of individuals on the topic and is used in this research as it matches the aims of this research.

To achieve the aims of the research, people working in marketing related discipline in a business to business environment were chosen. The marketers chosen for this research were people working in the valve industry. The valve industry was considered as it was an ideal business to business environment, where the products from this industry are manufactured by businesses and consumed by industrial customers such as refineries, mining sites, water treatment and distribution plants, chemical plants and other process industries and there is hardly any interaction with general residential consumers.

The study was undertaken in two stages, the first stage with participants from Australia and the second stage with participants from India. The participants were all from the valve industry and promoting similar products and brands and were often from the same company, but in different countries. These two datasets were used to investigate the similarities and differences in viewpoints between participants who were from a developed country to that of participants from a developing country.

The Q methodology procedure, the participant details, data collection and analysis are explained in detail in chapter 3 of this dissertation.

## 1.5 Scope of the study and delimitations

This research is about the attitudes of marketers towards sustainability and the focus is only on the internal viewpoints of marketers themselves. The research does not focus on the viewpoints of customers, employers or other stakeholders. Similarly, given this focus on B2B marketing, the findings may not apply to a B2C marketing context. The research was conducted using a total of 42 participants, 21 from Australia and 21 from India. The participants were selected such that they had experience working in the valve industry and their viewpoints were elicited using Q methodology.

Q methodology helps in bringing forth a set of marketers with a specific viewpoint. However, it does not aim at generalising the results for a wider group of population. While the 41 participants used in this research are sufficient and valid for Q methodology (Brown, 1980; Brown, 1993; Robinson, 2008; Van Exel & de Graaf, 2005; Vladica, 2012; Watts & Stenner, 2005; Watts & Stenner, 2012; Webler et al., 2009), it would be unwise to suggest that the viewpoints expressed by these marketers would cover all the viewpoints of marketers working in the valve industry in India or Australia as there would be hundreds of such marketers in these countries and the results of the study might not accurately reflect general consensus. Similarly, given that the study is conducted in the valve industry, it would be unwise to suggest that the viewpoints of this industry would be the same across other B2B industries.

## 1.6 Thesis outline

The thesis consists of six chapters, including this first introductory chapter. The first chapter provides an introduction to the field of interest and summarises the research aims, the problem definition and significance.

Chapter 2 presents a review of literature on green marketing, its importance and points out various gaps in this literature. In chapter 3 the research methodology used for this thesis, the participants, the tools used and the data collection process is provided. Chapter 4 gives an overview of the results and the empirical analysis. Chapter 5 presents a discussion of the results and social discourses. The conclusion of the research is presented in chapter 6 with a summary of the findings, managerial implications, limitations of the research and recommended areas for future research.

# Chapter 2 Literature review

This chapter presents the relevant theoretical background in order to position this research within extant scholarly literature. It also presents evidence for the theoretical importance of this thesis and the contribution to knowledge argued in the dissertation. This chapter is divided into two sections. The first one reviews the concepts of sustainable development and green marketing, and their significance. The second one discusses some of the main streams of literature related to green marketing in B2C and B2B contexts. Finally, the different streams of literature are linked to the research objectives, in order to illustrate how the contribution developed in this thesis addresses the gaps in the literature.

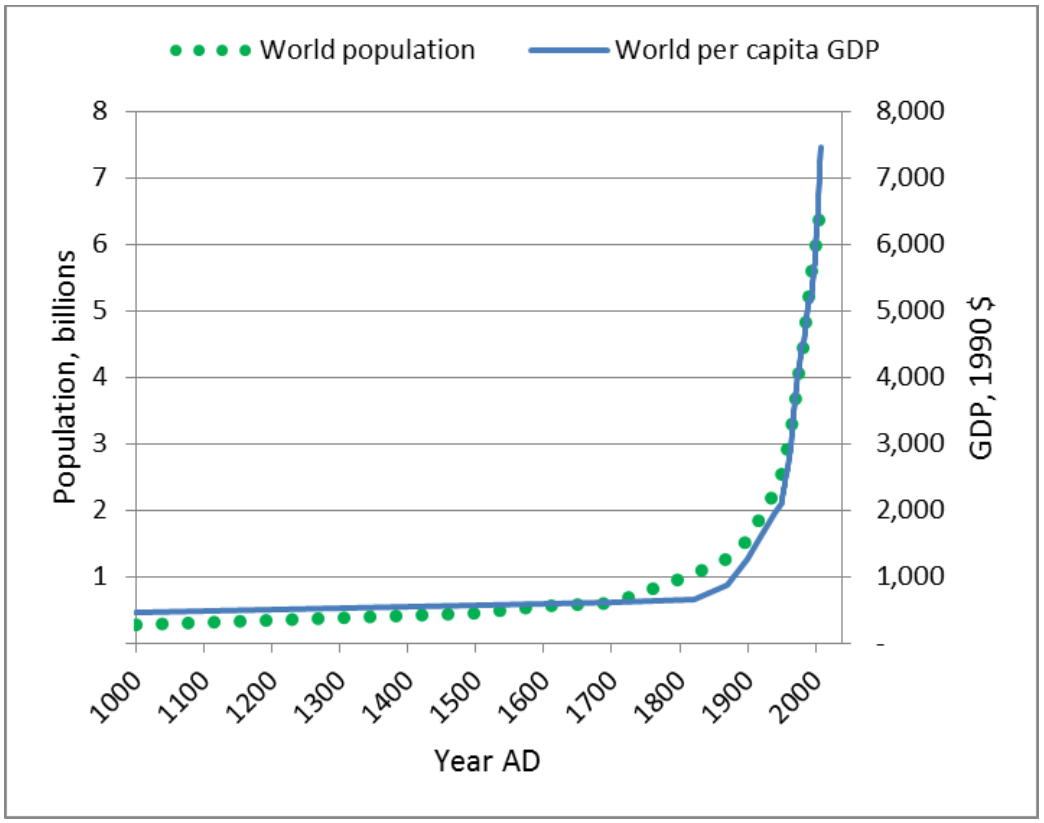
## 2.1 Sustainability

Sustainable development has been defined as the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987, p. 54). This definition was coined in a report of the Brundtland Commission in 1987. Sustainable development or sustainability, as a concept was not something that was newly developed by the Brundtland commission. The concept, or at least parts of it, has been in existence even before WCED was established and some argue that the concept has been in existence since ancient times (Jamrog & Vickers, 2007). However, the WCED report was instrumental in bringing the notion of sustainability into mainstream awareness. The report carried forward environmental issues raised in seminal books such as *Silent Springs* (Carson, 1962) and *Limits to Growth* (Meadows, 1972). It also raised concerns on global environmental issues such as the Union Carbide gas leak disaster at Bhopal in India in 1984 that took the lives of over 2000 people, the Chernobyl Nuclear power plant accident at Soviet Ukraine in 1986 and the Sandoz chemical spill that polluted the Rhine river in Switzerland in 1986. The report also raised concerns on health issues and poverty by pointing out the disasters like the African famine that killed millions of people in the

1980s. Thus, the WCED, through its report, laid foundations for the three pillars of sustainable development – environmental protection, social justice and economic prosperity.

The major reason for the recent uptake and increased demand of renewable energy such as wind power (Global Wind Energy Council, 2014), is due to the increase in global population and the strain it puts on sustainable development. Figure 2-1 shows the historical values of the global population and the corresponding gross domestic product (GDP).

**Figure 2-1 World population vs per capita GDP**




Source: Maddison, 2010 (http://www.ggdc.net/maddison/oriindex.htm)

As Figure 2-1 shows, there has been a rapid increase in population in the last century with the population increasing from about 1.5 billion in 1900 to over 7 billion in 2012 (census.gov, 2014); thanks to the industrial revolution and advances in agriculture, technology, healthcare and improvements overall living standards. Never before in our history have we had such a rapid population growth. Not only is our population increasing, the world is

increasingly becoming wealthier as well, with the world per capita GDP increasing significantly in the last century (Maddison, 2010). This increase in population and global wealth is indeed a success story which has not been accomplished by our predecessors; but as far as the planet is concerned, this growth is not sustainable and puts the current and future generations at risk.

We are faced with global challenges such as availability of fertile land, energy, drinking water, resource depletion and health problems among other issues. We are also faced with a great global inequality when it comes to distribution of wealth and living standards across the world (World Bank, 2014b). While the per capita GDP in a developed country like Australia stands majestically at over $67,000 per person; this figure in a country like India, with about 6 times as many people in Australia, is a mere $1500 per person (World Bank, 2014b).

Similarly, while access to basic amenities such as electricity can be taken for granted in almost all developed economies, billions of people across the world from developing countries still lack access to basic electricity, which generates a large demand for electricity in these countries (World Bank, 2014a). At the same time, with conventional power generation technologies such as coal and other fossil fuel remaining the biggest contributor for greenhouse emissions (ABC, 2013; IEA, 2012), there is an increased focus to move away from these harmful technologies to cleaner renewable energy sources. Consequently, it is not surprising to find that cleaner, non-emission sources like wind power is generating a lot of demand and interest across the world (GWEC, 2014).

Wind power though is just one example of a sustainable solution which is increasingly being adopted in the mainstream market. There are numerous other solutions such as solar power, electric and hybrid vehicles, CFL / LED lighting and many others, which are all gaining popularity and replacing more traditional, non-sustainable products. In order for these solutions and in turn sustainable development to be successful, we need effective communication

and awareness of sustainability issues and promotion of sustainable products. This, over time, leads to the emergence of a new stream of marketing - green marketing.

## 2.2 Green marketing

### 2.2.1 What is green marketing?

The concept of green marketing is widely misunderstood as just the promotion of products which are environmentally friendly (Polonsky, 1994). This misconception is perhaps due to lack of clarity or uniformity on the definition of the term green marketing. However, this misconception is not surprising, given that sustainable development, which lays the foundation for green marketing, has itself been labelled as a vague and fuzzy concept with hundreds of varied definitions (Bonevac, 2010; Charter & Tischner, 2001; de Burgh-Woodman & King, 2013; Mebratu, 1998). It has therefore been argued that developing a single definition that can incorporate all the aspects of a broad concept such as green marketing is both difficult to construct and is lacking in the literature (Miller & Szekely, 1995; Polonsky, 1994; Rivera-Camino, 2007; Van Dam & Apeldoorn, 1996). This is evident from Table 2.2-1, which summarises the multitude of definitions for green marketing and Table 2.2-2, which provides definitions for other terms related to green marketing.

**Table 2.2-1**

*Various definitions for green marketing*

| Source | Term used | Definition |
|---|---|---|
| (Peattie, 2001a) | Green marketing | Green marketing refers to marketing activities which attempt to reduce the negative social and environmental impacts of existing products and production systems, and which promote less damaging products and services |
| (Prakash, 2002) | Green marketing | Employs the term green marketing to refer to the strategies to promote products by employing environmental claims either about their attributes or about the systems, policies and processes of the firms that manufacture or sell them |
| (Jain & Kaur, 2004b) | Green marketing | It implies promotion or marketing of products and ideas that help protect the environment or cause less damage to the world around us |
| (Polonsky & Rosenberger, 2001) | Green marketing | Green marketing is the holistic, integrated approach that continually revaluates how firms can achieve corporate objectives and meet consumer needs while minimizing long term ecological harm |
| (Crane, 2000) | Green marketing | Green marketing is the incorporation of environmental dimensions into marketing activities |
| (Peattie & Charter, 2003) | Green marketing | Green marketing is the holistic management process responsible for identifying, anticipating and satisfying the needs of customers and society, in a profitable and sustainable way |
| (Ozanne & Smith, 1998) | Green marketing | Green or environmental marketing is the term used in the marketing literature to describe the marketing activities that recognize environmental stewardship as both a sound strategy and a potential growth opportunity |
| (Polonsky, 1994) | Green marketing | Green or environmental marketing consists of all activities designed to generate and facilitate any exchanges intended to satisfy human needs or wants, such that the satisfaction of these needs and wants occurs, with minimal detrimental impact on the natural environment |

**Table 2.2-2**

*Other terms related to green marketing*

| Source | Term used | Definition |
|---|---|---|
| Henion & Kinnear (as cited in Polonsky, 1994) | Ecological marketing | It is the study of the positive and negative aspects of marketing activities on pollution, energy depletion and nonenergy resource depletion |
| (Miles & Covin, 2000) | Environmental marketing | It is the adaptation of traditional marketing that includes environmental issues in the development of the product, corporate and product promotion, distribution systems, and pricing strategy |
| Coddington 1993 (as cited in Menon & Menon, 1997) | Environmental marketing | It is the marketing activity that recognizes environmental stewardship as a business development responsibility and a business growth opportunity. |
| (Menon & Menon, 1997) | Enviropreneurial marketing | It is the process for formulating and implementing entrepreneurial and environmentally beneficial marketing activities with the goal of creating revenue by providing exchanges that satisfy a firm's economic and social performance objectives. |
| (Varadarajan, 1992) | Enviropreneurial marketing | Environment-friendly marketing policies, strategies, and tactics initiated by a firm in the realm of marketing: 1. To achieve a competitive differentiation advantage for the firm's offerings vis-a-vis competitors' offerings. 2. Influenced by the firm's views on the duties and responsibilities of a corporate citizen. |
| (Kotler & Levy, 1969) | Societal marketing | Marketing which sensitively serves and satisfies consumer’s needs |
| (Prothero, 1990) | Societal marketing | An adoptaion of societal marketing where products will be provided only if the environment will not suffer any long-term effects from the production of the product |
| (F. M. Belz, 2008) | Sustainable marketing | Sustainability marketing goes beyond conventional marketing thinking. If marketing is about satisfying customer needs and building profitable relationships with customers, sustainability marketing may be defined as building and maintaining sustainable relationships with customers, the social environment and the natural environment |
| (van Dam & Apeldoorn, 1996) | Sustainable marketing | Sustainable marketing is marketing within, and supportive of, sustainable economic development. Combines different concepts linking marketing to the environment (ecological, green, and sustainable) and labels as environmental marketing. |

One of the earlier terms used before the incidence of green marketing and sustainability was the societal marketing concept (Kotler & Levy, 1969; Prothero, 1990). Societal marketing is related to green marketing as it emphasises the social dimension of sustainability. However, the focus is not only on sustainability issues, but on any issue that affects society.

In order to improve on this societal marketing concept and focus on the natural environment and resource conservation issues, the “ecological marketing” (Henion, 1981) concept was developed. The inclusion of environmental concerns in ecological marketing brought it closer to our contemporary notion of the sustainability concept than societal marketing. Ecological marketing, however, was criticised for its narrow focus on specific issues at the time such as pollution and resource depletion (Peattie, 2001b).

The narrow focus of ecological marketing led to the emergence of environmental marketing (Menon & Menon, 1997; Miles & Covin, 2000; Polonsky, 1994; Van Dam & Apeldoorn, 1996), which included the impact of marketing on broader environmental issues. A variation to this concept was enviropreneurial marketing (Menon & Menon, 1997; Varadarajan, 1992), which included environmental marketing initiatives along with the firm's economic and social performance objectives. The terms environmental marketing and enviropreneurial marketing, however, focus mainly on the environmental impact of marketing and the firm and other sustainablility dimensions such as social and economic dimensions do not receive much attention.

Another variation of environmental marketing was the term green marketing. The term green in itself is believed to be a “metaphor that encompasses what is best for the environment and business” (Miller & Szekely, 1995, p. 322) which is very similar to the term environmental marketing. Some of the definitions mention that green marketing and environmental marketing as the same concept (Jain & Kaur, 2004; Ozanne & Smith, 1998). However, the term ‘green’, despite many people not fully understanding what it actually is,

appears catchy and easy to comprehend and hence its usage has been more pronounced than environmental marketing (Miller & Szekely, 1995).

Sustainable marketing (Van Dam & Apeldoorn, 1996) was one of the later terms used in the literature to merge the concepts of marketing and sustainability. Sustainable marketing came as a more complete approach which incorporated all dimensions of sustainability in relation to marketing. Belz (2008), however, argues that the terms sustainable marketing can be misunderstood to signify marketing activities leading to long lasting customer relations; therefore Belz suggests the use of the term sustainability marketing, instead of sustainable marketing, to signify its relation to sustainable development.

In summary, there are many different terms – societal marketing, ecological marketing, environmental marketing, enviropreneurial marketing, green marketing and sustainable marketing – all with different definitions, which vary between different authors. However, it has been argued that many of the terminologies often intend to mean the same idea which is to link marketing with sustainability (Belz, 2008; Crane, 2000; Fraj-Andrés et al., 2009; Peattie, 2001b; Peattie & Crane, 2005). With this in mind, green marketing is used as the terminology in this research as it remains the most widely used terminology and reflects the contemporary state of scholarly discussion in the area.

### 2.2.2 Significance of green marketing to sustainable development

There are various opinions in the literature on the role of marketing in sustainable development. One opinion is that marketing is the cause of various sustainability issues due to its promotion of unsustainable consumption culture (Kilbourne, McDonagh, & Prothero, 1997; Peattie, 2001a; Peattie & Crane, 2005; Sanne, 2002; Schaefer & Crane, 2005; Sheth & Parvatiyar, 1995; Van Dam & Apeldoorn, 1996).

Sheth and Parvatiyar (1995) argue that the modern marketing concept, which simply strives to identify and meet the needs of the market, is in itself unsustainable as it promotes consumption. They suggest that in order to practice sustainable marketing, marketing is required to "innovate to overcome the apparent trade-offs between economic value and environmental value of marketing practices" (p.19).

Similarly, Peattie and Crane (2001b, p.141) point out that "marketing is based on neo-classical economics which is an environmentally-hostile doctrine". Others (Gordon et al., 2011, p.145) similarly suggest that marketing is not geared inherently towards sustainability, as its primary function is to sell more goods and increase consumption and profitability. Peattie and Crane (2001b), further explain that while marketing efforts towards environmental impact has improved over the years, the effort has been 'futile' as the goal of sustainability has not been achieved and surmises that the goal of making progress towards sustainability is perhaps not the domain of marketing (Peattie & Crane, 2005, p.368).

However, despite the view that marketing is detrimental to sustainable development, there is another stream of thought which points out that marketing is a potential saviour and has a very important role to play in achieving sustainable development (Belz, 2008; Gordon et al., 2011; Hobson, 2002; Peattie & Charter, 2003; Peattie & Peattie, 2009; Prothero et al., 2010; Prothero et al., 2011; Sharma et al., 2010).

Belz (2008), for instance, suggests that marketing is not just a problem, but it is part of the solution as well. Similarly Prothero (2011) assures that marketing is required for encouraging sustainable consumption to both businesses and consumers. Similarly, Gordon et.al. (2011) argue that there is an important role for green marketing in encouraging the development and promotion of sustainable products and services; and highlights the role of marketing in encouraging sustainable behaviour among individuals and businesses. They add that "marketing is central to global society, and when

harnessed responsibly can encourage us to recycle, reuse, buy fairtrade products, eat healthily, to drink sensibly, save energy and support good causes" (p.144). They are also convinced that by "using the power of marketing through green marketing, social marketing and critical marketing the opportunities for developing sustainable marketing clearly exists" (p.156).

In addition, Kotler (2011) advocates that if marketing can promote consumption, then de-marketing or consumption reduction can also do the opposite by promoting initiatives such as saving energy, water and so on, which also require marketing initiatives.

These discussions point out the importance of marketing to sustainable development. However, supporting green marketing initiatives for the greater good of the environment and sustainable development, despite its moral and ethical underpinning, also provides various benefits to firms. There are various arguments that green marketing provides competitive advantage (Baker & Sinkula, 2005; Craig & Douglas, 2001; D'Souza, Taghian, & Lamb, 2006; Manaktola & Jauhari, 2007; Mihalic, 2000; Ottman, Stafford, & Hartman, 2006; Shang, Lu, & Li, 2010; Sharma et al., 2010) and enables the achievement of higher prices (Cooper, 2005; Ginsberg & Bloom, 2004; Laroche, Bergeron, & Barbaro-Forleo, 2001; Roe, Teisl, Levy, & Russell, 2001; Sammer & Wüstenhagen, 2006; Tanner & Kast, 2003; Vlosky, Ozanne, & Fontenot, 1999). It also helps in promoting the environmental friendly and sustainable image of businesses, which is increasingly being demanded by various stakeholders (Baker & Sinkula, 2005; Miles & Covin, 2000).

In summary, for sustainable development, marketing is both a problem and a solution. Green marketing is extremely important as it is relied upon to promote sustainable consumption and to increase awareness amongst consumers on sustainability issues and availability of green products. Green marketing is increasingly being adopted by businesses as it provides various competitive advantages.

## 2.3 Green marketing research in B2C:

There is a wide range of literature on green marketing. A simple search on bibliographic databases such as Scopus and Web of science for the terms such as green marketing, sustainable marketing, sustainability marketing, ecological marketing, environmental marketing, enviropreneurial marketing and sustainable consumption yields over 1500 articles in Scopus and over 810 articles in Web of science database (as of May 2014). Yet, the mainstay of green marketing research has been in the Business to Consumer (B2C) area. Specifically, there have been a number of studies that have explored the various factors that affects the green behaviour of consumers.

### 2.3.1 Green awareness

The awareness level among consumers on green issues and green products, is an important factor in encouraging green behaviour. Pagiaslis and Krontalis (2014) found that consumers should have greater awareness on various environmental and sustainability issues, and on the green options available to them before they can buy green products such as bio fuels.

Although green awareness is important in encouraging green purchases, the actual level of awareness of green consumers is found to be low. Young, Hwang, McDonald and Oates (2010) pointed out that even self-declared green consumers are not equipped with the right information and lack the time to do the necessary research for making green purchases. Therefore, any green purchases are made at a high cost of time and effort, which is a significant barrier to green consumption. Similarly, Khare (2014) and Khare, Mukerjee and Goyal (2013), on their study of Indian consumers, found that a lack of awareness and knowledge about specific green products can affect the attitudes of individuals and peer groups and hence restrict ecologically conscious behaviour.

The claims on the level of environmental awareness amongst consumers from different studies, however, have been contradictory. For instance, the study by Mayank and Amit (2013) on consumer preference towards green products contradicts the study by Khare (2014) regarding environmental awareness among Indian consumers. Khare found that the consumers had a high level of awareness of green products. It was even argued that, given this high level of awareness, if marketers introduce new green products with effective communication, consumers would prefer those green products over conventional products.

Similarly, Nittala (2014) explored the factors influencing the purchase of green products in India and considered a sample of university teachers for the study. The study employed a questionnaire survey which was completed by 160 teachers at an Indian university and found that the respondents has very high awareness of green products, with 82.5% of participants identifying all green products provided to them. Given the narrow demography of the respondents and their high level of education, Nittala's study is only partially reflective of consumers as a whole. Nonetheless, these groups of aware consumers have the ability to subsequently educate and influence other consumer groups. Also, Rettie, Burchell and Riley (2012) undertook a green marketing study in the UK and found that consumers are already aware of what constitutes a green behaviour.

Therefore, research on green awareness shows contradictory findings with regards to the actual green awareness levels of consumers, though it is still a factor that affects consumer green behaviour.

### 2.3.2 Attitude – behaviour gap

Environmental awareness levels among consumers, though it has been pegged as an important factor for pro-green behaviour among consumers, does not always influence the actual consumption pattern of green products. While higher awareness can be assumed to positively influence green

purchasing behaviour, it is not always the case. For example, Nittala's study (2014) reported a high level of awareness of green products by university teachers, with 82.5% of participants identifying all green products provided to them. However, it was also found that despite the high level of environmental awareness and knowledge of green products, there was not a high degree of green purchase activity. The green behaviour was reported to be very low by the study. This phenomenon, where consumers exhibit a high level of awareness of sustainability issues and show an intention to purchase green products, but do not actually put it into practice is referred as the green attitude – behaviour gap (Kollmuss & Agyeman, 2002).

The existence of an attitude – behaviour gap has been attributed as a major factor for green product purchase, or lack of it, in different consumer studies. Pickett-Baker and Ozaki (2008) and Morel and Kwakye (2012), for instance, confirmed that there is an existence of a value-action gap between the respondents, where the positive attitudes of shoppers towards sustainability and the environment did not necessarily translate into a pro-environmental behaviour. Also, Mayank and Amit (2013), in their study on Indian consumers, reported that despite the positive attitudes among consumers towards green products, the overall purchase of green products were relatively low compared to conventional products.

The research on the attitude – behaviour gap, however, has also reported contradictory findings, where no gap between consumer intentions and their behaviour have been found. For example, Manaktola and Jauhari (2007) found that there is positive correlation between customer intentions and behaviour in green lodging amongst Indian consumers. Similarly, Kim and Chung (2011) and Forbes, Cohen, Cullen Wratten and Fountain (2009), found that there was positive correlation between consumer values, attitudes and environmental consciousness and the purchase behaviour for green products.

Other studies, such as Vermeir and Verbeke (2006; 2008), however, have been inconclusive with regard to consumers' attitudes and their behaviour towards green products. They found that, despite strong attitudes towards sustainable products, low perceived availability of such products results in low intention to make an actual purchase. On the other hand, they also found that even if individual attitudes were not strongly disposed towards sustainable products, other factors, such as social peer pressure, can contribute towards an intention to buy. This implies that apart from consumers' environmental attitudes and awareness, there can be various other factors that can ultimately influence green purchase behaviour.

This has been reaffirmed by the study by Manaktola and Jauhari (2007), who reported that, despite the fact that there was no apparent attitude – behaviour gap in the green lodging industry, only 15% of the respondents were willing to pay for the green practices. Similarly, Whitmarsh and O'Neill (2010) found that the pro-environmental behaviour of consumers significantly varies based on demographic factors such as gender, age, location and education. Also, Mayank and Amit (2013) reported from their study that, despite the positive attitudes of consumers towards green products, the overall purchase of green products were relatively low compared with conventional products due to a lack of availability of green products.

Therefore, attitude-behaviour studies have also reported contradictory findings with some reporting the existence of a gap and others finding no gap between consumer values and actions. However, it is apparent that factors such as price, demographic factors such as age, location, education and other factors such as product availability can influence the green purchase behaviour of consumers and can contribute to the widening or shortening of the gap between attitudes and behaviour.

### 2.3.3 Price

When we consider price as a deciding factor for consumer behaviour, many studies such as Manaktola and Jauhari (2007), have indicated that consumers are not likely to pay more for green products. This was reaffirmed by Nittala (2014) who found that while 66% of participants responded that they would purchase green products; about 36% of respondents were likely to purchase the lowest price product, irrespective of the product's environmental values. Similarly, Grimmer and Bingham (2013) found that Australian consumers were most likely to purchase from companies with high perceived environmental behaviour if the product price was low, irrespective of the consumer's own personal environmental values.

Furthermore, Davari and Strutton (2014) studied the influence of the green marketing mix on the perceived attitude-behaviour gap of consumers for green products. They found that, as price of the green product rises, consumer loyalty and trust in the green brand are likely to decline. They also found that green brands find it difficult to convince the consumers of the environmental value of their green products and to justify the higher prices of these products. This view was also evident from Lu, Bock and Joseph (2013a) whose study reported that the millennial generation found green products to be more expensive than conventional products. These arguments suggest that the product price has to be lower (or at least as low) for green products to become affordable in order to encourage consumers to exhibit a green behaviour.

However, there is another set of contradicting findings which argues that green products need not necessarily be cheaper; rather they can attract a price premium from consumers. For example, Sammer and Wüstenhagen (2006) found out that the consumers were likely to pay a price premium of about 30% for home appliances labelled as more energy efficient than less efficient products. They also found that consumers were willing to pay this premium, even when the life time savings in energy and water bill from using

the appliance was less than the premium paid in price for purchasing the greener, more efficient product.

Similarly, Banyte, Brazioniene and Gadeikiene (2010) found that 65% of the respondents in their research were willing to pay about 5% to 10% price premium for eco-friendly food products compared to conventional products. Also, studies in Australia, have been reported that consumers were willing to pay a premium for green products (D'Souza, Taghian, & Lamb, 2006), some reporting a willingness to pay up to a 22% premium (Remaud, Mueller, Chvyl, & Lockshin, 2008).

The above studies regarding the price requirement for green products to encourage consumers to adopt green behaviour have been contradictory with some reporting that green products can command a price premium, while others argue that green product should become more affordable for consumers to purchase green products.

### 2.3.4 Demographic factors

A different factor that could perhaps explain the contradictory nature of the findings from the studies discussed so far could be demographic attributes such as age, gender, location and education levels among these consumers. Most of the studies that were discussed were done in different countries with different target groups, which could have resulted in the contradictions in findings. Studies such as the one by Jain and Kaur (2006), found that Indian women had more environmental awareness and exhibited greater pro-environmental behaviour then men. They also found that education and income played a positive role on environmental awareness and behaviour among consumers with higher levels of education and income resulting in pro-environmental behaviour.

In a similar study, Khare (2014) and Jain and Kaur (2006) found that people with high income were generally more receptive to green marketing and

exhibited higher ecologically conscious behaviour. However unlike Jain and Kaur, Khare found that other factors such as age, education, gender and marital status did not have any impact on the ecologically conscious behaviour of consumers. Also Nittala (2014) identified that high levels of education did not influence green purchase behaviour of consumers.

### 2.3.5 Brand value

The studies on consumer demographic factors, much like the other factors such as price, green consumer awareness and consumer behaviour, have also provided contradictory results. However, a common factor that has been consistent with many consumer studies in having a positive impact on consumer green behaviour is the value of green brands / brand image. For instance, studies such as those by Mayer (2012), Banyte, Brazioniene and Gadeikiene (2010), Phau and Ong (2007) and Grimmer and Bingham (2013), report that consumers are positively influenced by companies and brands with high perceived environmental behaviour, which can in turn give the green brands a completive advantage over conventional brands.

Also, Juwaheer, Pudaruth and Noyaux (2012) analysed the impact of green marketing strategies on consumer purchase behaviour and found a positive correlation between green advertising and branding and consumer behaviour. In addition, Sammer and Wüstenhagen (2006) in their study on the influence of eco labels on the consumer purchase behaviour of home appliances found that consumers were likely purchase a popular brand; and are also likely to pay a price premium, of about 50%, to a known brand product than a no-name product.

These studies, that highlight the importance of brand value and brand image on consumer green behaviour, provide an alternate view on the research on green marketing. The B2C literature has traditionally focused on consumer perception of green marketing; hence there has been an acute focus on a few consumer variables such as demography, price, attitudes, purchase

behaviour and similar factors. Yet, the effects of these factors on consumer behaviour are largely confounding with results varying from one study to another. However, a factor such as green brand value, which also affects green consumer behaviour, moves the focus from consumers and puts it back on ‘marketers’. There has to be a significant effort from marketers to improve the value of their green brands if consumers are to be attracted to make a green purchase. So, instead of focusing only on consumers and trying to profile the green consumers or exploring their demographic attributes, green marketing research should also focus on marketing and the role of marketers in encouraging and shaping consumer green behaviour.

### 2.3.6 Marketers

In support of this view that there has to be a focus on marketers and not just on consumers, various studies have shown encouraging results that marketers should capitalise on in order to promote green behaviour. For example, Rettie, Burchell and Riley (2012) argue that there is no such thing as a ‘green consumer’ and that consumer behaviour can only be attributed as green in relation to the activity. They also argue that the results of identifying demographic variables and factors for green consumer behaviour are always confounded because they vary from one activity to another. They suggest that normalising green activities by suddenly changing regular activities, such as driving a car, to sustainable alternatives, such as public transport, might not be feasible. Instead, they suggest a more gradual change assisted by promotional activities to transform from conventional behaviour to normalise green behaviour as an alternative strategy for marketers.

Similarly, Mayank and Amit (2013) found that consumers have high level of awareness; and that they not sceptical about the green claims of organisations. Given this high awareness they believe that if marketers introduce new green products with effective communication, consumers would prefer those green products over conventional products, which is an encouraging sign for green marketers. Also, Smith and Brower (2012) found

that environmentally conscious consumers look beyond the superficial product and pay attention to the company's environmental reputation, eco labelling and environmental packaging. They found that consumers look for terms such as ecofriendly, recycling and green to signal green credentials of a product, which can be capitalised upon by marketers to successfully promote green products.

In addition, Pagiaslis and Krontalis (2014) in their questionnaire survey on Greek consumer choices of biofuel found that the consumer behaviour for green products such as biofuels can be improved if marketers communicate and thereby strengthen consumer beliefs and concerns on environment. Furthermore, Juwaheer, Pudaruth and Noyaux (2012) while analysing the impact of green marketing strategies on consumer purchase behaviour in Mauritius found that there was a positive correlation between green advertising and branding with consumer behaviour.

From an organisational point of view, Ogunmokun, Tripolitano and Rose (2012) studied the effects of undertaking green marketing strategies on the performance of small business organisations. They undertook a mail questionnaire survey which was completed by 75 owners / marketing managers of small business organizations engaging in manufacturing and engineering activities in the Australian city of Perth. They found that firms with high levels of green marketing out-performed those with low levels of green marketing in terms of overall sales, sales growth and market share. From such studies we can find that, marketers' green efforts can not only benefit consumers, but also businesses.

While the above studies show encouraging signs for marketers to adopt and improve consumer green behaviour, there is another steam of research that argues the efforts of green marketers have been inadequate and call for improvement. For example, Rahbar and Wahid (2011) found that consumers pay attention to eco labels and consider it as an important factor for believing the claims of marketers and make green purchases based on it. However, it

was found that the introduction of, and increase in, use of eco labels have not created much positive behaviour change for green purchases, even amongst consumers who have greater environmental awareness. Similarly, they found that green advertising is meant to increase environmental awareness of consumers but still there was a lack of higher positive purchase behaviour in Malaysia since the introduction of green advertising. They argue that this failure of green advertising and eco labels in promoting green consumer behaviour is due to the lack of prevalence of environmental advertising; and also due the lack of specificity in many environmental claims used in green advertising. This calls for significant improvements in current green marketing efforts.

Similarly, Nittala (2014) found that the respondents were sceptical about the environmental claims of marketers and that they look for clear and factual information on the green attributes of products, which was not always easy to find, pointing that marketers need to improve their credibility. Also, Davari and Strutton (2014) studied the influence of green marketing mix on the perceived attitude-behaviour gap of consumers in the USA. They found that green brands find it difficult to convince consumers of the environmental values of their green products and to justify the higher prices of these green products.

In addition, Paladino and Pundit (2012) studied the effects of attitudes and behaviour of consumers and the effects of branding on the purchase of renewable electricity in Australia. They used focus groups and in-depth interviews to collect data from 120 participants, who were the principal decision makers in their household and responsible for the payment of their electricity bill. They found that employees of various energy companies were not provided with necessary information on the company's green energy products leading to a negative impact on consumer adoption of green energy. They also found that the consumers who did purchase green energy could not see any benefit from their purchase and had no affinity towards the energy company, thereby exiting their contracts with the energy provider if

there wasn't an exit fee. This suggests that sales staff and employees need to be better trained on green attributes of their products and marketers need to improve their marketing efforts to convince consumers on not only making a green choice, but to stick with it in the long run.

Also, Chen and Chang (2013) studied the influence of greenwashing on green trust. Greenwashing is the “act of misleading consumers regarding environmental practices of a company or the environmental benefits of a product or service” (TerraChoice, 2009). Chen and Chang explored how greenwashing affects consumer confusion and perceived risk on Taiwanese consumers who had experience of buying information and electronics products in Taiwan. They concluded from the study that greenwashing is positively associated with green consumer confusion and perceived risk of consumers. At the same time, greenwashing is also negatively associated with green trust, ultimately affecting green consumer purchases.

The above literature points to various positive elements that can be capitalised on by marketers to encourage consumer purchase of green products. At the same time, the literature also points to disappointments in several green marketing efforts undertaken by marketers. There is clearly a need to move the attention away from consumers and focus on marketers as their actions are key to influencing consumers’ green behaviour. Yet, research on marketers’ attitudes towards green marketing has gone largely un-investigated. The aim of the present research is therefore to fill this gap by directly focusing on marketers and exploring their attitudes towards sustainability and green marketing.

## 2.4 Green marketing research in B2B:

The business segment has significant impact on sustainable development, with many industries such as power generation plants, oil extraction, refining, mining and other industries, which involve a lot of B2B transactions, significantly contributing to environmental challenges. The International

Energy Agency estimated that the industrial sector contributed to 22% of the world's total CO2 emissions in 2011 (IEA, 2013). The Business to Business (B2B) market also contributes to a significant portion of sales and transactions in the world. The number of transactions and impact of sustainability issues is far greater in B2B compared to B2C environment (Polonsky et al., 1998; Pujari et al., 2004; Rivera-Camino, 2007). In countries like the US, over 43% of total sales of all products are said to be from B2B transaction and the rest from B2C (LaPlaca, 2013).

Despite the significance of B2B transactions, there has been a lopsided focus on green marketing research in B2C contexts. While a simple search with terms such as green marketing, sustainable marketing, sustainability marketing, ecological marketing, environmental marketing, enviropreneurial marketing and sustainable consumption yielded over 1500 articles in Scopus; the same search yielded only 6 articles where specific B2B terms such as "b2b", "business-to-business" and "business to business" were added to the search criteria (as of May 2014). This highlights the acute lack of green marketing research in the B2B environment.

There is an important role for marketing in promoting sustainability in the B2B context and not just in the B2C marketplace. Marketing can positively influence a firm's projection of sustainability and sustainable innovation strategies in the B2B context, which can potentially flow through the entire value chain. By using case studies of 47 B2B firms who have adopted sustainable strategies, Mariadoss, Tansuhaj and Mouri (2011) developed propositions linking marketing capabilities to innovation strategies for sustainability. They found that technical innovations such as new sustainable product development and green packaging are positively associated with firms' sustainable strategies. However, they also argued that non-technical innovations related to marketing such as pricing, channel linking, sales and relationship building were also positively associated with firms' sustainable strategies.

While marketing strategies can positively influence a firm's projection of sustainability, research has also found that marketing can sometimes lead to deceptive projection of firms' sustainability. For instance, Berth (2011) explored the different factors that make up high or low levels of greenness in B2B organisations. The study expanded the greenness matrix of Simula, Lehtimäki and Salo (2009) to include the various factors that make up each quadrant of the greenness matrix by interviewing 4 marketing managers from manufacturers and 4 marketing managers from business buyers in New Zealand. It was found that a firms' philosophy towards sustainability influences whether they have high or low greenness factors and also the firms green marketing strategy. Marketing strategies such as green washing can make firms with low actual greenness levels to be projected to have higher levels of sustainability. At the same time, poor green marketing strategies can lead to firms with high actual levels of sustainability being associated with low levels of greenness as it hasn't been marketed properly.

Other research, such as work by Fraj, Martinez and Matute (2013), also suggests that different marketing strategies are prevalent in the B2B context, with varying effects on the actual sustainability of a firm. They undertook a study to analyse the influence of green marketing on the performance of B2B organisations. They used a mail survey completed by 181 manages of B2B organisations; 71% of whom were environmental managers. They found two dimensions of green marketing strategies used by firms. The first was process oriented activities which involve complex internal changes within an organisation in terms of eco design, materials and logistics. The second dimension was market-oriented activities which involve projecting an environmental commitment to the external market without undergoing complex changes within the organisation. They argue that while market-oriented practices might bring short term financial benefits to organisations, process-oriented initiatives provide greater benefits as it can lead to true environmental management in the long term and bring financial benefits at the same time by providing cost benefits through waste reduction.

Green marketing also has more significance in the B2B context as it often involves greening of the entire supply chain space. Sharma, Iyer, Mehrotra and Krishnan (2010) explored the role of marketing in achieving environmental sustainability objectives in the B2B supply chain. They propose several supply chain strategies for environmental sustainability such as reducing surplus supply by processes such as lean and built to order practices and reducing reverse supply of products through recycling and remanufacturing. They argue the need for marketing in driving such strategies. However, understanding the influence of marketing within these strategies requires empirical research on marketers to understand their attitudes and their capacity to contribute towards sustainability, which was not explored empirically by their study.

On the other hand, an empirical study undertaken on the B2B supply chain, such as the one by Stoughton and Votta (2003) which examined the concept of chemical management systems as a supply chain product service system (PSS), suggests that green marketing in the B2B space is quite challenging. The chemical management system was an alternate management model whereby, instead of compensating suppliers based on volume of chemicals purchased, the suppliers were compensated based on the service they offer, it can lead to more efficient and less chemical use, which works better for the environment. However, based on the insights gained from implementing chemical management systems in 15 US companies, it was found that there are significant challenges in implementing such a system which conflicts with traditional accounting and compensation principles. Also, without proper management and understanding of the chemical management system, it was concluded that implementing such a system cannot lead to chemical use reduction or significant environmental benefits.

Given such challenges faced by B2B marketers, and given that the strategy used for green marketing can have a vast influence on the projection of a firm’s actual sustainability, it is evident that there should be more research on marketers in the B2B context. This is similar to our findings from green

marketing literature in the B2C context. Yet, there hasn't been much empirical research on green marketing in B2B context, and certainly no research has focused on the attitudes of marketers towards sustainability and green marketing. Therefore, to address this gap, this research focuses on the attitudes held by marketers working in the B2B area as there is a greater need for empirical research in this stream.

## 2.5 B2B green marketing research in developing countries

It is well acknowledged that sustainability is a global issue; however there is a larger need for sustainable development in developing countries compared to developed countries. The per capita consumption of developing countries is only a fraction of that of developed countries. A country like India consumes less than 8% of the per capita energy consumption of a developed country like Australia (U.S. Energy Information Administration, 2013). This is largely due to poor standards of living in developing countries and lack of access to basic amenities such as electricity (World Bank, 2014a). However, even with the limited per capita emissions, developing countries are now emitting more overall greenhouse emissions than developed countries, due to their large population.

With more than 80% of the world's urban population about to be based in developing countries (World Economic and Social Survey, 2013), even a small increase in per capita consumption, due to increased economic activities and need for better standards of living, would increase the overall consumption in developed countries exponentially due to their huge population. Yet, research on green marketing in developing countries has not had the same level of attention as that of developed countries. Cherian and Jacob (2012) identified the lack of green marketing studies in developing countries, but did not attempt to fill this gap in their research. Similarly, Kirchgeorg and Winn (2006) and Shrikanth and Raju (2012), also identified the lack of green marketing research in developing countries. However, both

these studies were conceptual in nature and no empirical research was carried out in developed countries.

It is possible to find empirical research on green marketing in developed countries. Some of the green marketing literature discussed in section 4.2 were indeed conducted in developing countries (Chen, 2010; Chen & Chang, 2013; Jain & Kaur, 2004; Khare, Mukerjee, & Goyal, 2013; Khare, 2014; Manaktola & Jauhari, 2007; Mayank & Amit, 2013; Nittala, 2014; Rahbar & Wahid, 2011). However, these studies are specific to the B2C context. Considering the explosion of offshore manufacturing in low cost developing countries, and the rapidly increasing industrial activities in the developing world, there is a greater scope for green marketing in developing countries in the B2B context as well. Despite this, it was found that no research to date has been undertaken in developing countries in the B2B green marketing context, which is an evident gap in the literature.

## 2.6 Research question

The review of green marketing research in this chapter presents three gaps in the literature. The first gap that is evident is the need to focus on marketers, as they have a significant part to play in encouraging green consumer behaviour. There is already an enormous focus on green marketing research in the B2C context but, despite its importance and possible impact in sustainable development, there has hardly been any focus on green marketing in the B2B context. The second gap uncovered is that the need to focus on marketing attitudes is therefore greater in the B2B context. The final gap that was found was that despite the importance of sustainability in developing countries, no research till date has focussed on green marketing in the B2B context in developing countries.

This research aims to address these gaps in the literature through the following research question:

What is the attitude of B2B marketers towards green marketing and does it vary between a developing and a developed country?

The methodology used to collect and analyse data in order to address the gaps in the literature and to address the research question is explained in chapter 3.

# Chapter 3 Research methodology

To address the research gaps and the research question formulated in chapter 2, Q methodology was used to gather and analyse data from marketers. The research design, methodology and the procedure are explained in this chapter.

## 3.1 Research Design

Q methodology is the main research methodology used in this research (Brown, 1980; Stephenson, 1936; Watts & Stenner, 2012). To meet the objectives of Q methodology, a small section of marketers were interviewed and the data was gathered and analysed to uncover various opinion on green marketing, which is outlined in section 3.3.1. The data collection for the research was undertaken in two stages.

The main difference between the two stages of this research is in the participants. Stage 1 used participants with experience in B2B marketing in Australia. Stage 2 used participants who had experience in B2B marketing in India. These two datasets were used to investigate the similarities and differences in viewpoints between participants who were from a developed country to that of participants from a developing country.

## 3.2 Q Methodology

Q methodology was introduced by physicist / psychologist William Stephenson in 1935 (Brown, 1993). It is:

> A qualitative but statistical approach that encompasses a distinctive set of psychometric and operational principles, which provides a foundation for the systematic and rigorous study of subjectivity, a person's viewpoint, opinion, attitude, and the like (Cools et al., 2009, p. 442).

Stephenson developed Q methodology to systematically study subjectivity as every person views the world differently. When individuals are provided with certain objects, they will view it from their subjective viewpoint. When the same objects are presented to different individuals, the output is different for each individual. The strength of Q methodology is that it integrates the subjective viewpoints from different individuals in such a manner that people can be classified under different groups or factors and the similarities and differences between various the various viewpoints can be studied. The benefit in using Q methodology is that it can be used to study complex topics. At the same time even with small, well-selected samples a range of diverse viewpoints can be elicited (Brown, 1980; Brown, 1993; Robinson, 2008; Vladica, 2012; Watts & Stenner, 2005; Webler et al., 2009).

Q methodology is regarded as a methodology rather than as a method because it nests data collection and analysis procedures within a theoretical perspective. Q methodology comprises a fundamental set of principles for exploring subjectivity, an instrument of data collection (the Q-sort), and statistical tools for data analysis and inference through the PQ method software (Previte, 2005; Wilson, 2005).

The Q study begins by identifying a number of statements on the topic, known as the concourse. The concourse is often created from data obtained through interviews with relevant people. From the concourse, a sample of texts called the Q statements is selected. The participants are asked to prioritise these Q statements by sorting them in a rank order, an operation that generates the Q-sort. Once all the participants have completed the Q-sorts, the Q-sorts are analysed and spheres of common viewpoints on the subject from different individuals are elicited. These different steps involved in Q methodology are explained in section 3.3.

Q methodology has been in use for over 75 years and has been predominantly used in studies relating to political and social sciences. It has been recently identified as a novel methodology for conducting studies

related to environmental and climate research (Anable et al., 2006; Cools et al., 2009; Webler et al., 2009) and is increasingly being used in various studies related to sustainability (Barry & Proops, 1999; Cools et al., 2009; Di Ruggero, 2011; Doody et al., 2009; Rajé, 2007; Van Exel & Rietveld, 2009; Van Exel et al., 2011).

### 3.2.1 Q and R technique

The use of correlation and factor-analysis in the study of human behaviour is due to the advances in statistical theory in the early twentieth century, by the likes of Karl Pearson and Charles Spearman (Brown, 1980). The most popular test used in such study of traits is Pearson's product-moment coefficient, which produces the 'r' statistic. The letter r, commonly referred as the capitalised R, represents the 'R method'. Stephenson worked as a graduate student under Spearman in the UK and had exposure to the R method (Vladica, 2012). This early understanding of R technique and Spearman's Factor-analysis enabled Stephenson to provide an alternative methodology for his work. The name Q was adopted to differentiate this methodology from 'R method'. Stephenson introduced Q as the technique of inversion of traditional factor analysis used in R method (Brown, 1980). While both these methods use factor analysis and correlation for data analysis, there are several fundamental differences between the two methods that set Q methodology apart. Q methodology measures subjectivity, whereas R method measures objectivity (Brown, 1993). Due to this difference, the nature of the correlation and clustering that occurs in Q methodology differs from R methodology.

While the inversion of factor analysis was mentioned by Stephenson (Stephenson, 1936), it has been misunderstood that Q method is simply an inversion of traditional factor analysis (Brown, 1980). Where R method uses factor analysis that correlates data matrix by row, Q has been misunderstood as a transposed R matrix, which correlates data by column instead of row (Brown, 1980).

Q method has also been confused with Q-sorts, which is just a data collection tool used in Q methodology. While Q-sorts and Q factor analysis are part of Q methodology, Q methodology has to be seen as the methodological approach, which also incorporates other elements suggested by Stephenson along with the Q factor analysis for studying subjectivity (Brown, 1980).While many studies have claimed the use of Stephenson's Q methodology, it has been argued that most of these studies have only used the inversion of factor analysis mentioned by Stephenson. Instead of studying subjectivity, it has been used for conforming R based objective analysis (Brown, 1980; Previte, 2005).

To illustrate the difference between Q and R, we can consider two hypothetical situations for our research. The aim of the research is to uncover attitudes of marketing professionals towards sustainability. The R method approach for this study might, for example, correlate sales people with experience of 10 to 20 years, working at a particular region, to the number of green products they sold. The variables, 'years of experience' of the person, 'working in a particular region' and 'number of green products sold' are objective variables which are verifiable. The strength of R methodology in such a situation would be in abstracting these traits and attributes from a large group of individuals and generalising the findings to explain the characteristics of the general population. Consequently, R-methodology typically uses large samples of subjects to explore variability between cases and generalises the results.

Q method, on the other hand, uses subjective variables and identifies the common patterns across individuals to understand the situation of salespeople when they sell green products. It would start by finding out the various factors associated with individuals selling a green product. The factors such as 'customer demand', 'environmental impact of product' and 'employer incentives' may all come up as different variable that lead to marketers promoting green product. Since these are all subjective variables

and would differ from person to person. Hence, with Q methodology, individuals would be asked to sort all these variables in a rank order, from their subjective viewpoint. For one person ‘customer demand’ might be more important than the ‘environmental impact of product’. For another person ‘employer incentive’ might be more important than ‘customer demand’. Thus, each person doing ranking these factors would come up with their own pattern, which would differ between individuals.

In Q methodology, these individual sorts can be statistically analysed to reveal common factors and elicit social perspectives from different individuals. In this instance, a perspective, for example, may be the existence of ‘marketers with objective consideration’ where employer incentive and customer demand are a major factor for selling green products by a group of marketers. A second perspective may for example be the existence of ‘socially conscious marketers’ where ‘environmental impact’ is ranked highly by one set of marketers.

While R method is more useful for generalising the results to a wider population, Q method is less concerned in generalising the findings, and instead focuses on smaller, well-selected samples to analyse variability within a particular scenario (Brown, 1980; Brown, 1993; Robinson, 2008; Vladica, 2012; Watts & Stenner, 2005). Hence, Q method is used to produce an in-depth view of the typologies of perspectives within a given situation and often uses a structured sample of individuals who are particularly relevant to the study objectives rather than using a random sample (Brown, 1980, van Exel & de Graaf, 2005).

### 3.2.2 Justification for using Q methodology

Q methodology was selected for this research as it suits several aims of this research. Firstly, Q methodology helps to uncover people’s attitudes, viewpoints or opinion on a particular subject (Barry & Proops, 1999; Brown, 1980; Brown, 1993; van Exel & de Graaf, 2005; Watts & Stenner, 2005). This

is a suitable match for this research as the aim here is also to explore people's attitudes, specifically marketing professionals.

Secondly, Q methodology is "particularly suited to study those social phenomena around which there is much debate, conflict and contestation, such as environment, for its express aim is to elicit a range of voices, accounts and understanding" (Barry & Proops, 1999, p.339). The phenomenon studied in this research is green marketing, which has had various discussions in the past and is still subject to much debate.

Finally, Q methodology has been successfully used in similar studies relating to sustainability and the environment (Barry & Proops, 1999; Cools et al., 2009; Di Ruggero, 2011; Doody et al., 2009; H. Hasan & Meloche, 2013; Pini, Previte, & Haslam-McKenzie, 2007; Rajé, 2007; Van Exel & Rietveld, 2009; Van Exel et al., 2011). Therefore the previous use of this method establishes its relevance and validity for this research.

## 3.3 Q Methodology procedure

The whole process of Q methodology can be expressed as a six step process (Barry & Proops, 1999; Hogan, 2008):

1. Identifying the concourse – a compilation of extensive dialogue and literature on the topic
2. Selection of Q set – a set of statements used in data collection
3. Selection of P set – the participants in the Q study
4. Performing the Q-sorts – the tool used for data collection
5. Q factor analysis – statistical procedure to generate the factors or viewpoints
6. Factor interpretation – generating a series of account based on the factors

The components of Q methodology – the concourse, the Q set, Q-sort, Q factor analysis and interpretation is common to stages 1 and 2 which are explained in section 3.3. The main difference between the two stages is the participants in the P set which is explained in sections 4.

### 3.3.1 Concourse

The first step in a Q study is identifying the concourse. The concourse represents a wide range of subjective viewpoints on the topic of interest and is used to identify a set of statements for the Q set (Brown, 1980).

The concourse can come from a variety of sources, such as verbal data from interviews, television, newspaper, scholarly articles and so on; and non-verbal data such as photos, objects and other external stimuli (van Exel & de Graaf, 2005). The concourse for this study was undertaken via interview from a set of experienced B2B marketers (Brown, 1993; Vladica, 2012; Webler et al., 2009; Wilson, 2005). The benefit of using interview to obtain the concourse is that the research content is generated directly by participants. This eliminates any bias or forced data being introduced in the study by the researcher (Barry & Proops, 1999; Webler et al., 2009).

### 3.3.2 Concourse – Interviews

The interviews undertaken in this research were designed to gather the various viewpoints on green marketing from marketers working in a business to business environment. Interviews were used in this research for the purpose of obtaining the concourse. Six marketing and sales professionals working in the valve industry who were directly relevant to the aims of the study were interviewed and the conversations were recorded. The recordings yielded an average of 12 pages of data per interview, and the concourse for this research was selected from these transcripts.

The principle benefit of the interviews is that the interview, which is an account of opinion from different marketers, helps in generating a range of views on the topic (Wilson, 2005). As these views are generated by the marketers themselves, the Q set generated based on these views are easily comprehensible by the marketers when they perform the Q-sort, as it is specific to their industry and relevant to their products. Equally, the interviews are a separate qualitative process and are, therefore, a separate research instrument from Q methodology. The data generated through the interviews are also the viewpoints of marketers about green marketing which can be viewed as a separate research finding. This can be used as an additional step to validate findings from Q methodology when expressing the common viewpoints amongst marketers on green marketing.

### 3.3.3 Sample

The target population for the interviews were marketers working in a business to business environment. The marketers used for this research were people working in the valve industry. The valve industry was chosen as it was a suitable business to business environment, where the products in this industry are manufactured by businesses and consumed by industrial customers such as refineries, mining sites, water treatment and distribution plants, chemical plants and other process industries and there is hardly any interaction with general residential consumers.

A convenience sample of six marketing and sales professionals were selected from this industry and interviewed. The participants were from four different companies and had varied job titles related to marketing such as Senior Marketing Manager, Project Marketing specialist, Product Manager, Area Sales Manager, Sales Engineer and Account manager. The participants had 7 to 50 years individual experience in marketing functions within the industry. Three of the participants were people with Australian experience and three of them with experience in India. Table 3.3-1 provides an overview of the participants.

**Table 3.3-1**

*Interview participants*

| Participant | Title | Years of experience | Ethnicity |
|---|---|---|---|
| AU101 | Project marketing specialist | 50 | Australian |
| AU102 | Sales Engineer | 10 | Australian |
| AU103 | Area sales manager | 23 | Australian |
| IN104 | Product Manager | 7 | Indian |
| IN105 | Sr. marketing manager | 18 | Indian |
| IN106 | Sales Manager | 32 | Indian |

The interviews in this research were done with six participants as there was sufficient data collected for generating a Q set and also because the six participants provided themes which were mostly repetitive. The interviews were recorded for transcription at a later stage.

### 3.3.4 Instrument

The data was collected from the participants using semi-structured interviews. All participants were asked about their opinion on sustainability, green marketing, green marketing initiatives relevant to their industry and employer, and also about the green marketing initiatives they undertook in their respective jobs. The interviews lasted from thirty minutes to an hour and were all recorded. After each interview, the recordings were checked and then transcribed.

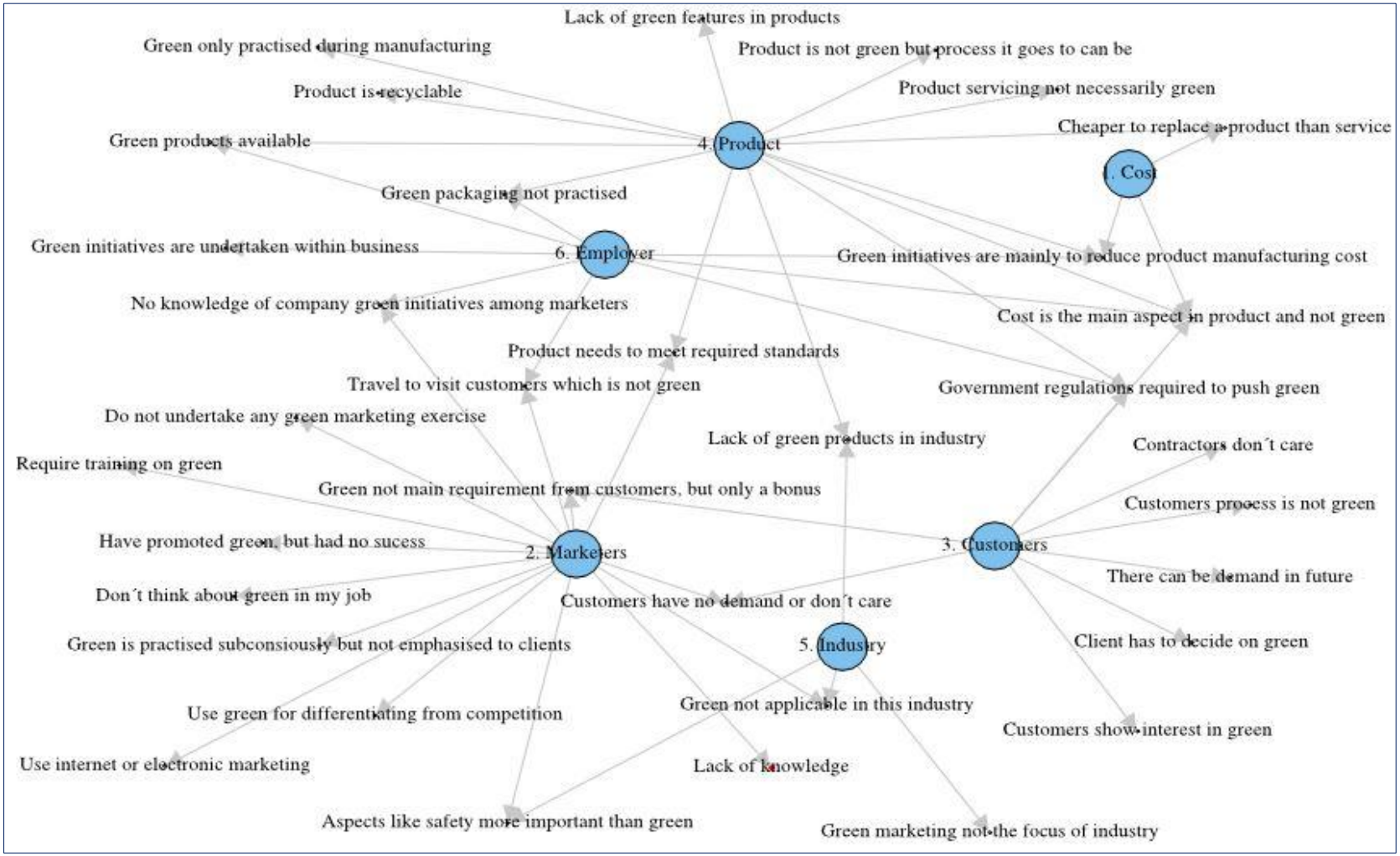
### 3.3.5 Data analysis

The purpose of analysing the interview data is mainly to find common themes within the interview transcripts and then select the Q-set based on the themes identified. A complete qualitative analysis was not required for the interviews as this was not the main instrument in the research. The transcripts were reviewed several times and common themes and opinions were identified and plotted with the help of RQDA software and are represented in figure 3-1. The RQDA software was selected because it was

free CAQDA software and was readily available online and was sufficient to complete a basic thematic analysis of the transcripts.

The interviews yielded an average of 12 pages of transcripts from each interview. The transcripts were read thoroughly and codes were created based on the responses from participants. The transcripts were marked with the codes using RQDA software whenever a theme pertaining to a particular code was uncovered. If a new theme was found, a new code was created and used to mark that theme. The process was repeated with the interviews and the codes were checked for duplication and errors. The final analysis yielded 351 statements from the six interviews, which were reduced to 34 codes with more than one occurrence in the transcripts. The lists of codes were then grouped under 6 major categories – Cost, Marketers, Customers, Product, Industry and Employer.

**Figure 3-1 RQDA codes and categories**



The codes, code categories and their relationship are listed in Figure F3.3.1.4-1. The top five codes which were common to all the interviews and had the highest frequency from the respondents are highlighted in Table 3.3-2.

**Table 3.3-2**

*Top five codes from data analysis*

| Code | Frequency | Number of Respondents |
|---|---|---|
| Cost is the main aspect in product and not green | 57 | 6 |
| Customers have no demand or don´t care | 31 | 6 |
| Green is practiced subconsciously but not emphasised to clients | 21 | 6 |
| We do not undertake any green marketing exercise | 15 | 6 |
| Green initiatives are mainly to reduce product manufacturing cost | 14 | 6 |

### 3.3.6 Q set

A Q set, also referred as a Q sample, is a selection of statements drawn from the concourse. The statements selected are presented to the subsequent participants for performing the Q-sorts and thus form the basic tool provided to participants to express their views. The Q set therefore needs to be carefully selected to include a range of statements that include a breadth of communication on the topic and should be a miniature version of the concourse.

The Q set statements need to be short sentences that are easy to comprehend and unambiguous. Unlike statements used in surveys, which need to be structured so that all participants read it and comprehend the same meaning from the statements, the statements for Q methodology can be interpreted by different people in different ways (Brown, 1980). There can be hundreds of statements that can emerge from the concourse, but not all statements are selected for the Q set as it would be impossible to manage all

the statements in the Q-sorts. It is therefore essential to have the right number of statements in the Q set. A small Q set has the risk of not covering enough range of discussion from the concourse and a large Q set poses the problem of becoming complicated for the participants and difficult to handle in the Q-sort procedure. As a rule of thumb, a Q set should contain 40 to 80 statements (Watts & Stenner, 2005). Typically a set of 40 to 50 statements which cover a diverse range of dialogue from the concourse is selected in Q methodology (Brown, 1980; van Exel & de Graaf, 2005).

There are no set rules for selecting a Q sample. There can be structured samples and unstructured samples that can be used in a study (Hogan, 2008). Structured samples are commonly selected by strategic sampling, which ensures selection of a variety of themes from the concourse (Watts & Stenner, 2005; Webler et al., 2009). Here, the concourse is divided into a number of categories. The statements in the concourse are placed under these categories and a small number of statements from each category are drawn to form a Q set of 40 to 50 statements. In unstructured samples, the researcher selects the items considered to be important without excessive analysis. Here, effort is made to represent all major themes from the concourse with not much focus on smaller themes. Both the structured and unstructured samples are acceptable as long as they represent a wide variety of opinion from the concourse.

It is also possible that a Q set selected from the same concourse by different individuals can lead to two different Q sets as the selection techniques might differ between individuals irrespective of structured or unstructured sampling techniques. However, this is not considered a problem in Q methodology as long as the Q sets includes a wide range of statements from the concourse (van Exel & de Graaf, 2005; Watts & Stenner, 2005). These statements are propositions and not facts. Ultimately the participants are the ones who are going to value the significance of statements by ranking them in their subjective viewpoint and the person selecting the statement does not decide on its significance (Watts & Stenner, 2005). Therefore, as long as a range of

dialogue is ensured in the Q set, the process of selecting the statements from the concourse and the actual set of statements used in the Q set would not affect the overall research output.

In order to represent a variety of themes uncovered from the interviews in the Q sample, the interview responses were divided into 6 categories - Industry, Cost, Marketers, Customers, Product and Employer, and 7 statements from each category was selected for the Q set. This yielded in a Q set of 42 statements, which was considered a sufficient sample size (Brown, 1980; Brown, 1993; van Exel & de Graaf, 2005; Watts & Stenner, 2005; Webler et al., 2009). The statements from each category are provided below.

**Cost**

5. Customers mainly look at price when purchasing a product
12. Cost savings is the main reason for green initiatives like saving water and electricity
17. Customers accept green products only if they get better price and delivery over standard product
28. Meeting specifications is more important than providing a green product
33. I use green attributes of our products to differentiate from competitors if our price is high
35. Green products are expensive
2. It is cheaper to replace our product than repairing it, even if repairing is greener

**Industry**

13. Green initiatives are common in our industry
23. There are a lot of green products in our industry
15. We need more focus on green marketing in our industry
31. There will be demand for green products in the future
39. The amount of green products in the industry has decreased over time
16. Green marketing is not relevant to our industry
37. It will be nice to see more green products in our industry

**Marketers**

14. Green products come to my mind when talking to my customers
21. I have had success promoting green products
36. I don't care about green marketing
32. I use green forms of transport to visit customers
34. I use internet and pdf catalogues instead of paper which is green
24. I know the green attributes of our products
10. I hardly think about green behaviour in my job

**Customers**

8. There is an interest in green products among customers
26. Customers use our products in green processes like waste water treatment
4. Contractors show interest in green products
6. Customers care about green behaviour and demand green products
40. Customers don't like the term green
1. The client has to decide if they need green products
7. Customers use our products in non-green process

**Product**

3. Safety features in a product is more important than green attributes
42. Products from competitors have more green features than our products
19. We use green packaging for our products
22. Most of our our products have green features in them
29. Servicing and repairing a product is greener then buying a new product
38. I look for greener ways to market our products
27. The products I sell are recyclable

**Employer**

9. We have several green initiatives within our business
30. I would need training if I have to promote green attributes of our products

11. Government needs to enforce and create demand for green products to enable businesses to manufacture green products
18. We practise green initiatives only during the manufacturing stage
41. Manufacturers need to innovate and produce more green products
20. There are products in our business which are classified as green products
25. I participate and support the green initiatives we have in our business

The statements were randomly numbered to avoid them being drawn consecutively by the participants and to help identify them during later stages of analysis.

### 3.3.7 P set

The P set in Q methodology refers to the participants who perform the Q-sort. The P set can be categorised as either a single-participant design or multi-participant design (Watts & Stenner, 2012). In a single participant design, the Q-sorting procedure is done by a single individual. An example would be a study where the same individual does a number of different Q-sorts with the same Q sample, but with different “conditions of instruction” (Stephenson, 1980). The result of such a study would yield a number of Q-sorts, which, upon factor analysis and interpretation, can reveal subjectivity within a single person.

A multi-participant design includes a number of different participants all of whom perform separate Q-sorts with the same Q set and same condition of instructions. In this design, the individual subjectivity is not the main focus of the study; instead the different Q-sorts upon factor analysis and interpretation would represent the collection of shared viewpoints of different individuals on the subject. Since the research undertaken aims to explore the attitudes and viewpoints of a group of marketers on green marketing, a multi-participant design was used for this research.

When considering the number of people required for the Q-sorts, Stephenson (1936, p. 358) argued that “the number of persons (in Q method) can be quite small”. It has since been acknowledged that unlike the large number of respondents required in R method, the focus of Q methodology is to use small, well-selected samples to analyse variability within a particular scenario (Brown, 1980; Brown, 1993; Robinson, 2008; Vladica, 2012; Watts & Stenner, 2005; Webler et al., 2009).

When considering the number of participants in Q method, the only requirement is to have “enough participants to prove the existence of a factor” (Brown, 1980, p. 192). The factor in this context is a shared viewpoint or opinion that is expressed through the Q-sorts. The requirement is typically the existence of two to four factors in a study. Each factor should inturn be defined by four to five people (Van Exel & de Graaf, 2005, p. 6; Webler et al., 2009, p. 10).

However, predicting the number of factors in a study and the number of people who would define each factor is difficult before the end of the study. Hence, depending on the length of the Q set, many Q studies allow between 15 to 40 participants to ensure sufficient coverage (Anthony, 2011; Barry & Proops, 1999; Cools et al., 2009; Curry, Barry, & McClenaghan, 2013; Di Ruggero, 2011; Doody et al., 2009; H. Hasan & Meloche, 2013; H. M. Hasan & Dwyer, 2010; Previte, 2005; Rajé, 2007; Robinson, 2008; Van Exel et al., 2011; Wilson, 2005).

Webler et al. (2009) suggest that, as a rule of thumb, the ratio of number of participants to the number of statements in the Q sort should be a maximum of 1:2. Applying this rule to the study on hand, it was determined that for the 42 statement Q set, the maximum participants for the P-set should be 21. A P-set of this size should yield 2 to a maximum of 5 factors if at least 4 participants define each factor.

The participant selection in Q methodology should not be random (van Exel & de Graaf, 2005); instead the participants selected should be relevant to the purpose of the study. For this study, participants were required to be in a marketing related job in a business to business environment. Hence, a convenience sample of people working in sales and marketing functions in the valve industry was selected, consistent with the participants used in the interviews.

The P set was different for stages 1 and 2

- Stage 1 was made up of 21 participants who were Australians, working in the valve industry in Australia.
- Stage 2 included 21 participants who were of Indian origin and had experience in the valve industry in India and overseas.

The number of participants with their job title and amount of experience are provided in Table 3.3-3 and Table 3.3-4.

**Table 3.3-3**

*Participants - job title*

| Job Function | Stage 1 | Stage 2 | Total |
|---|---|---|---|
| Business Development Manger | 5 | 6 | 11 |
| Sales manager | 3 | 4 | 7 |
| Account manager | 7 | 8 | 15 |
| Product manager | 6 | 1 | 7 |

**Table 3.3-4**

*Participants – years of experience*

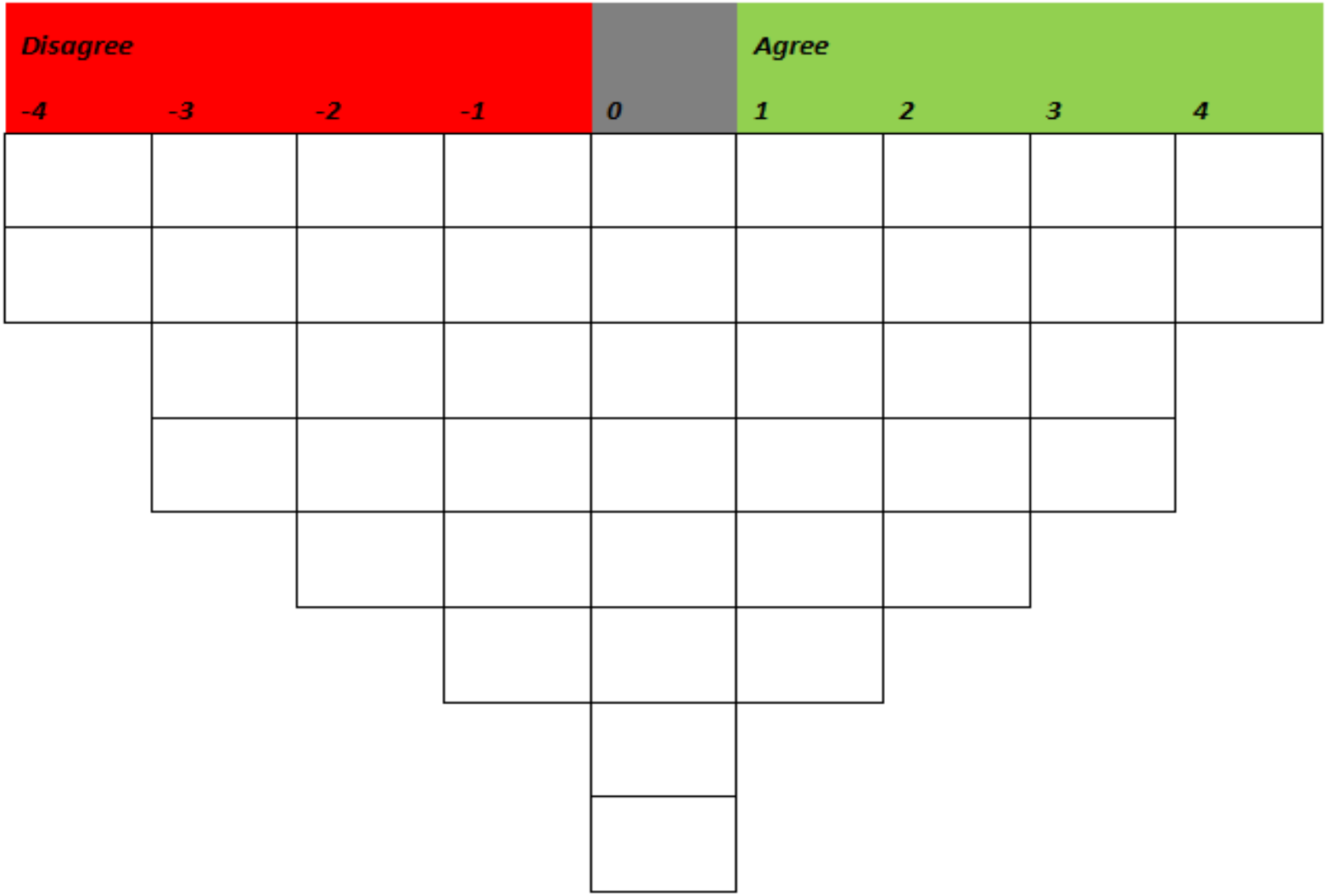
| Years of experience | Stage 1 | Stage 2 | Total |
|---|---|---|---|
| less than 10 | 6 | 8 | 14 |
| 10 to 20 | 5 | 7 | 12 |
| 20 to 30 | 6 | 2 | 8 |
| over 30 | 4 | 2 | 6 |

### 3.3.8 Q-sort

The Q-sort is the tool used to gather data from the participants.

It is ‘the technical means whereby data are obtained for factoring’ (Brown, 1980, p. 17), where the participants are presented the statements in the Q set printed on cards. There is one card for each statement. The participants are provided with the cards randomly and asked to rank the statements. Ranking statements from 1 to 42 can become cumbersome; therefore for simplicity participants are asked to place the cards in a quasi-normal distribution (Watts & Stenner, 2005). The distribution used for this research is shown in Figure 3-2.

**Figure 3-2 Quasi-normal distribution**



As the participants place the cards in this fixed distribution, such a distribution is also referred as forced distribution. However, the name is misleading and use of forced distribution in Q methodology is often misunderstood as a constraint on individual choices. Brown (1971, p. 286), however, asserts that the factors that emerge in the analysis stage of Q methodology are ‘more influenced by ordering preferences than they will be by distribution preferences’ and assures that ‘both the range and the distribution shape are arbitrary and have no effect on the subsequent statistical analysis’ (Brown, 1991, p. 9). Furthermore, it has been argued that even with forced distribution ’there is ample room for individuality’ (Brown, 1980, p. 201) and that such apprehensions regarding forced distribution are ‘largely misplaced’ (Watts & Stenner, 2005, p. 77).

Before starting the Q-sorts, participants are provided with information regarding the topic and instructions on how the Q-sorting needs to be done. The participants have to read all the statements thoroughly in order to get an impression on the statements. Arranging all the statements from the Q set, 42 statements, directly in the quasi normal distribution can take time. In this study, the participants were asked to initially sort the statements into three piles; one pile for statements they tend to agree with, one for statements they tend to disagree with, and the rest in a third pile where they neither agree nor disagree with the statements. Once this initial sorting was completed, the participants were provided the actual quasi-normal distribution and asked to rank the statements from the three piles by placing the cards in blank spaces thus forming the Q-sorts.

The Q-sorting task is traditionally conducted in a face to face setting. However, newer forms of conducting Q-sorts are available in the form of online sorts. For this research, the ‘FlashQ’ application, which was developed specifically for conducing Q-sorts over the internet, was used. The main idea of FlashQ was to develop an online tool to reduce the researcher's workload,

with consideration to the needs of respondents by providing a user friendly interface (Hackert & Braehler, 2006b).

Flash Q was selected for this research as it has been recommended for Q methodology (Watts & Stenner, 2012) and had the option of online Q-sorts which was also device independent. In this research, the online Q-sort was convenient, practical and saved travel cost as participants from different countries participated in the research. All the participants had access to internet and the online mode allowed participants to conduct the Q-sorts at a convenient time. The researcher only had to send them a link to the website for the participants to complete their Q-sort. As the online mode only required a web browser to conduct the Q-sort, it was device independent and could be accessed through both PC, Mac and even on mobile devices such as smart phones and tablets which had a flash enabled web browser. The FlashQ was customised using the set of instructions provided in the FlashQ website (Hackert & Braehler, 2006a). The xml files were first modified to create 42 cards, one for each statement in the Q set. The Q-sort distribution was then customised to match the distribution from -4 to +4 as per figure F3.3.4-1. The labels and text fields were then modified to include the set of instructions for each stage of the Q-sort.

An initial data collection was done with 4 participants aged in their 20s, 30s, 40s and 60s respectively. The participants were provided the link to the website and instructions and were asked to perform the Q-sort. The researcher was present when the sorting was performed to answer any queries and uncover any problems that may arise. The initial participants were able to perform the sorting without difficulty and were comfortable with the design and use of the application and no revision was required on the instructions or the data. A screen shot of the entire process was created to be sent to participants to help them visualise the process, in case they were unsure of steps for conducting the Q-sorts. The researcher then invited other participants to perform the Q-sorts by email. A total of 49 participants were contacted out of which 42 completed and submitted their sorts online.

### 3.3.9 Q factor analysis

Factor analysis is the quantitative part of Q methodology where statistical procedures are used to extract a set of factors or common view points from various Q-sorts. It is also referred as the scientific base of Q (van Exel & de Graaf, 2005). Upon factor analysis, it would be possible to extract a few typical Q-sorts for the study (Barry & Proops, 1999) which would be analysed to uncover various social perspectives.

In Q methodology, factor analysis involves several steps. Initially, an overall configuration of all the Q-sorts is first inter-correlated and the correlation matrix is calculated. The correlation matrix is the inter-correlation between individuals and represents the amount of similarity or dissimilarity in the views of various participants represented through their Q-sorts. When the correlation is high between two individuals, they would have ranked the statements in a similar way to express similar views. In R method, instead of individuals, the objects are inter-correlated, i.e. the statements would be correlated. This is the reason Stephenson presented Q as an inverted factor analysis used in R.

The correlation matrix and factor analysis for stages 1 and 2 of data collected are explained in sections 4.1 and 4.2 respectively. When the initial Q-sorts mentioned in section 3.3.4 were completed, a test analysis was performed with the 4 Q-sorts to ensure that the collected data and factor analysis can be performed satisfactory. Due to its simplicity with just 4 participants instead of the 21 participants in each of the study, this test analysis is used to explain the principle of Q factor analysis in this section. The scores for the 42 statements taken from the rank provided by the 4 participants in their Q-sorts for the test analysis is presented in Table 3.3-5.

**Table 3.3-5**

*Statement ranks for test analysis*

| Item | AU201 | AU202 | AU203 | AU204 | Item | AU201 | AU202 | AU203 | AU204 |
|---|---|---|---|---|---|---|---|---|---|
| s1 | 0 | 2 | 0 | 1 | s22 | -4 | 1 | 1 | 1 |
| s2 | 2 | 0 | -3 | -1 | s23 | -2 | -4 | 0 | -1 |
| s3 | -1 | -1 | 3 | 2 | s24 | 3 | -1 | 0 | -2 |
| s4 | -4 | 1 | -1 | 0 | s25 | 0 | -2 | -1 | -1 |
| s5 | -3 | 2 | 2 | -1 | s26 | 1 | 1 | 0 | 3 |
| s6 | 3 | -2 | 1 | 0 | s27 | 3 | 2 | -4 | 0 |
| s7 | 4 | 4 | 2 | 4 | s28 | -2 | 3 | 2 | 2 |
| s8 | 0 | -3 | -3 | -2 | s29 | 4 | 1 | 3 | -2 |
| s9 | -1 | -3 | -1 | 0 | s30 | 2 | 2 | 1 | 2 |
| s10 | 0 | 0 | 2 | 2 | s31 | 1 | 3 | 1 | 0 |
| s11 | 1 | 2 | 3 | 2 | s32 | -1 | -2 | -3 | -2 |
| s12 | -1 | 0 | -2 | 1 | s33 | 0 | -3 | -1 | -4 |
| s13 | -2 | -4 | -1 | -2 | s34 | 2 | 0 | 2 | 4 |
| s14 | -1 | 0 | -4 | -3 | s35 | 1 | 0 | -1 | 3 |
| s15 | 3 | 4 | -2 | 0 | s36 | 1 | -1 | -2 | -4 |
| s16 | 0 | 0 | -2 | 0 | s37 | 2 | 3 | 4 | 3 |
| s17 | 1 | 1 | 3 | 1 | s38 | -2 | -2 | -2 | -3 |
| s18 | 0 | -1 | 0 | 0 | s39 | -1 | -2 | 1 | 1 |
| s19 | -3 | -1 | 0 | -3 | s40 | -2 | -3 | -3 | -1 |
| s20 | 2 | 1 | 0 | 1 | s41 | -3 | 3 | 4 | 3 |
| s21 | -3 | -1 | 1 | -3 | s42 | 0 | 0 | 0 | -1 |

For calculating the correlation matrix, the participants AU201 and AU202 were correlated. Table 3.3-6 shows the sum of squares for the scores for participants AU201 and AU202 along with the sum of square difference between participants 1 and 2. The correlation, r, between participants 1 and 2 can now be calculated using the following formula (Brown, 1991, p. 3):

$$r = 1 - \{\frac{sum\ of\ difference^2}{sum\ of\ A^2 + sum\ of\ B^2}\} = 1 - \{\frac{260}{188+188}\} = 0.31.$$

Similarly the correlation between all 4 participants was calculated and the correlation matrix is represented in Table 3.3-7. The values are multiplied by 100 and rounded up as whole numbers in the table.

**Table 3.3-6**

*Sum of squares and square difference for participants 1 and 2*

| Q-sort | AU201 | AU201^2 | AU202 | AU202^2 | (AU201-AU202)^2 |
|---|---|---|---|---|---|
| s1 | 0 | 0 | 2 | 4 | 4 |
| s2 | 2 | 4 | 0 | 0 | 4 |
| s3 | -1 | 1 | -1 | 1 | 0 |
| s4 | -4 | 16 | 1 | 1 | 25 |
| s5 | -3 | 9 | 2 | 4 | 25 |
| s6 | 3 | 9 | -2 | 4 | 25 |
| s7 | 4 | 16 | 4 | 16 | 0 |
| s8 | 0 | 0 | -3 | 9 | 9 |
| s9 | -1 | 1 | -3 | 9 | 4 |
| s10 | 0 | 0 | 0 | 0 | 0 |
| s11 | 1 | 1 | 2 | 4 | 1 |
| s12 | -1 | 1 | 0 | 0 | 1 |
| s13 | -2 | 4 | -4 | 16 | 4 |
| s14 | -1 | 1 | 0 | 0 | 1 |
| s15 | 3 | 9 | 4 | 16 | 1 |
| s16 | 0 | 0 | 0 | 0 | 0 |
| s17 | 1 | 1 | 1 | 1 | 0 |
| s18 | 0 | 0 | -1 | 1 | 1 |
| s19 | -3 | 9 | -1 | 1 | 4 |
| s20 | 2 | 4 | 1 | 1 | 1 |
| s21 | -3 | 9 | -1 | 1 | 4 |
| s22 | -4 | 16 | 1 | 1 | 25 |
| s23 | -2 | 4 | -4 | 16 | 4 |
| s24 | 3 | 9 | -1 | 1 | 16 |
| s25 | 0 | 0 | -2 | 4 | 4 |
| s26 | 1 | 1 | 1 | 1 | 0 |
| s27 | 3 | 9 | 2 | 4 | 1 |
| s28 | -2 | 4 | 3 | 9 | 25 |
| s29 | 4 | 16 | 1 | 1 | 9 |
| s30 | 2 | 4 | 2 | 4 | 0 |
| s31 | 1 | 1 | 3 | 9 | 4 |
| s32 | -1 | 1 | -2 | 4 | 1 |
| s33 | 0 | 0 | -3 | 9 | 9 |
| s34 | 2 | 4 | 0 | 0 | 4 |
| s35 | 1 | 1 | 0 | 0 | 1 |
| s36 | 1 | 1 | -1 | 1 | 4 |
| s37 | 2 | 4 | 3 | 9 | 1 |
| s38 | -2 | 4 | -2 | 4 | 0 |
| s39 | -1 | 1 | -2 | 4 | 1 |
| s40 | -2 | 4 | -3 | 9 | 1 |
| s41 | -3 | 9 | 3 | 9 | 36 |
| s42 | 0 | 0 | 0 | 0 | 0 |
| Sum | | 188 | | 188 | 260 |

**Table 3.3-7**

*Correlation matrix for the test analysis*

| SORTS | AU201 | AU202 | AU203 | AU204 |
|---|---|---|---|---|
| AU201 | 100 | 31 | 5 | 23 |
| AU202 | 31 | 100 | 41 | 56 |
| AU203 | 5 | 41 | 100 | 54 |
| AU204 | 23 | 56 | 54 | 100 |

The standard error for the correlation matrix is calculated using the formula $1/\sqrt{number\ of\ statements}$ (Brown, 1980). In this case, the standard error is $1/\sqrt{42}$ = 0.15. Brown (1991) suggests that the correlation between two Q-sorts would be considered significant if the correlation score is more than 2 to 2.5 times the standard error irrespective of whether it is a + or - score. Therefore in this case if the correlation score between two sorts is above 0.30 (or 30 when multiplied by 100 as shown in Table 3.3-7 on page number 63), it can be considered significant. Using this rule, Q-sorts AU201 & AU202, AU202 & AU203, AU202 & AU204 and AU203 & AU204 correlate with each other and express similar views through their Q-sorts, whereas participant AU201 does not correlated with the participants AU203 and AU204 are ranking the items in the Q-sorts differently.

The main purpose of generating a correlation matrix is to subject it to factor analysis. Factor analysis helps by comparing the correlation matrix and "determines how many basically different Q-sorts are in evidence" (Brown, 1991, p. 15). The individuals who have high correlation between them would have ranked the items in their respective Q-sorts in a similar manner and would be part of a group. Multivariate analysis reveals how many such different groupings are evident. Each family of Q-sorts would represent a factor which in turn represents a viewpoint that is common to that group of participants.

There are several calculations involved in generating factors and factor scores from the correlation matrix. These have been explained by Brown

(1980, p. 201-224) and since software packages are available to calculate and extract factor scores they are not explained here. PQ method (Schmolck, 2013) is one such software that was developed specifically for Q methodology and is freely available for public use. The PQ method software helps in calculating correlation matrix, factor scores, factor rotation and data analysis and was used in this research.

There are two types of multivariate analysis that can be used in Q methodology – Centroid analysis and Principal component analysis (PCA). Centroid is one of the oldest factor analysis techniques and is widely used in Q methodology (Brown, 1980). PCA, however, is regarded as equally suitable for Q methodology (Watts & Stenner, 2005) and PQ method has options for factor analysis by both centroid and PCA methods.

The un-rotated factor scores that were calculated using the PQ method software for the test analysis using PCA is shown in Table 3.3-8.

**Table 3.3-8**

*Un-rotated factor scores*

| | **Factors** | | | |
|---|---|---|---|---|
| **SORTS** | **1** | **2** | **3** | **4** |
| AU201 | 0.4377 | 0.8521 | -0.2847 | -0.0364 |
| AU202 | 0.8145 | 0.1016 | 0.5064 | -0.2643 |
| AU203 | 0.7324 | -0.4649 | -0.4172 | -0.2708 |
| AU204 | 0.8531 | -0.1351 | 0.0208 | 0.5036 |
| Eigenvalues | 2.1192 | 0.9707 | 0.5121 | 0.3981 |
| % expl.Var. | 53 | 24 | 13 | 10 |

The number of factors that are extracted from the Q-sorts depends on the way the sorting is done by participants. The maximum number of factors that can be extracted would be the same as the number of Q-sorts that were completed. For the test analysis, we have a total of 4 Q-sorts; therefore the maximum number of factors would be 4. However, the purpose of factor analysis is to reduce the data and focus on only selected factors which have a significant number of Q-sorts in its grouping. It has been argued that in a Q

study it is only required to have 2 to 5 factors with about 4 participants defining each factor (Van Exel & de Graaf, 2005; Webler et al., 2009). Brown (1980, p. 223) suggest that while extracting the initial un-rotated factors, “the magic number 7” is usually suitable, which can then be rotated to select a given number of factors for analysis.

While selecting factors for analysis, not all factors from the un-rotated matrix are selected. Only significant factors are selected from the original un-rotated factors. Watts and Stenner (2012) suggest that a factor can be considered significant if its eigenvalue exceeds 1.0. A factor with an eigenvalue less than this implies that the factors constitutes of less variance than a single Q-sort. Applying this rule in our test analysis, we can see that factor 1 with an eigenvalue of 2.12 is significant and should be extracted, but factors 2, 3 and 4 are not. However, only extracting those factors with eigenvalues more than 1.0 is considered ineffective as it can either lead to lot of factors which have eigenvalues more than 1.0 or it can miss on important factors which have eigenvalues less than 1.0 (Brown, 1980; Watts & Stenner, 2012).

Brown (1980, p. 223) suggests that a factor can be considered significant if it has a minimum of two loadings which exceeds 2.58 times the standard error, which corresponds to a significance level of $p<0.01$.
Applying Brown’s criteria in our test analysis, a significant loading was determined to have a score of 0.40 or more, irrespective of the sign, which implies that factor 1 has 4 significant loadings and other 3 factors have 2 significant loadings each. However, it is also suggested that the factors extracted should account for a high amount of variance in the study, usually 35% or more for all factors combined (Brown, 1980; Watts & Stenner, 2012). Variance in a study is the amount of meaning that is expressed by a factor compared to the total meaning that is expressed by all the Q-sorts combined.

While applying this to the test analysis, the factors 1 and 2 have a high variance and represent 53% and 24% respectively and together represent 77% of the total meaning contained in the Q-sorts. These factors also have

two or more significant loadings and hence qualify to be extracted. Factors 3 and 4 on the other hand have small variance compared to 1 and 2 and therefore they do not qualify for extraction. However, if a Q-sort has a significant loading on more than 1 factor, it would not be considered to load significantly on any of the factors and the particular Q-sort is defined as confounded. In the test analysis, if factors 1 and 2 are extracted, the Q-sorts AU201 and AU203 are confounded and therefore, do not have the minimum 2 loadings per factor required to qualify it. In such instances, the factors are rotated in order to align position of factor to with respect to other Q-sorts.

Factor rotation is a system by which a factor is viewed from a vantage point and the loadings which are closely associated towards a particular factor are rotated to align them better towards that factor and support it for meaningful interpretation. Factor rotation can be either carried out either judgementally by the researcher, or via statistical criteria such as varimax or using a combination of the two (Brown, 1980; Van Exel & de Graaf, 2005; Watts & Stenner, 2012; Webler et al., 2009). The rotated factor matrix for our test analysis using varimax solution, followed by a manual rotation of -30° is shown in Table 3.3-9.

**Table 3.3-9**

*Rotated factor matrix*

| | Loadings | |
|---|---|---|
| **QSORT** | **1** | **2** |
| AU201 | -0.4149 | 0.8634X |
| AU202 | 0.4107 | 0.7106X |
| AU203 | 0.8128X | 0.3032 |
| AU204 | 0.6228X | 0.5985 |
| % expl.Var. | 35 | 43 |

The varimax rotation was done with only factors 1 and 2 as they represented most of the study variance and factors 3 and 4 were insignificant. The significant loadings in these factors are marked with an ‘x’. As it is evident from Table 3.3-9, factor rotation alters the factor loadings and the variance compared to Table 3.3-8. However it should be noted that factor rotation does

not create new viewpoints or create new factors that originally does not exist in the un-rotated factor matrix. As Watts and Stenner ascertain, “factor rotation shifts our viewpoint or perspective, not the viewpoints captured within the Q-sorts” (2012, p. 140). They also add that:

> If a particular Q-sort has uniformly low factor loadings following extraction or if, in other words, it contains very little common variance, no amount of factor rotation will ever alter that fact. We can’t make a Q-sort that expresses an obviously unique viewpoint share more in common with others in the group or force it to closely approximate the viewpoint of a factor with which it does not agree (2012, p. 127).

As a result of the rotation, both factors 1 and 2 have the 2 or more significant loadings of 0.40 or more. However, Q-sorts AU201, AU202 and AU204 are all confounded as their loadings exceed 0.40 for both factors 1 and 2. Watts and Stenner (2012) suggest that if there is such confounding, the significance level may be raised to a higher point where confounding does not occur. In our case, when the significance level is raised from 0.40 to 0.60, there is no confounding and a two factor solution can be considered as appropriate for the test analysis. The two factors also account for a high amount of study variance, which further supports the 2 factor solution in this case.

It has to be noted that the factors extracted, the significance level of 0.6 and the explained variance of 78% for these factors, is only provided for illustrating the calculation in a test analysis that was performed before the actual calculations for the study. The actual significance level used for the study, number of factors extracted and the corresponding variance levels are all explained in chapter 4.

### 3.3.10 Interpretation and social discourses

The interpretation in Q methodology involves generating a series of accounts summarised based on the statements with significant scores (Watts & Stenner, 2005). In order to get the scores of statements and factors, once the

factor analysis is completed in PQ method, option 7 - QANALYZE is selected which calculates correlation matrix, un-rotated factor matrix, eigen-values, variance, rotated factor matrix, Z scores, inter-correlation between factors, descending array of differences between factors, distinguishing statements for each factor, and consensus statements and PQ method outputs them to a project file.

The first step in interpretation is to generate an idealised Q-sort for each factor. The factor array contains the weighted scores, Z, which is the total score for a statement in a factor. The Z scores for the factor 1 in our test analysis are shown in Table 3.3-10. The statements are ranked based on the Z scores and this rank is used to create an 'idealised' Q-sort or 'social perspective' for each factor (Webler et al., 2009). For the test analysis, the statements with rank 1 and 2 will be under +4; ranks 3, 4, 5 and 6 will under +3; ranks 7, 8, 9, 10 and 11 under +2 and so on, up to the last two statement which will be under -4. The idealised Q-sort for the factor 1 thus created is represented in Figure 3-3 which is used during interpretation stage. Similarly the Z scores would be calculated for factor 2 and an idealised Q-sort was generated for that factor as well.

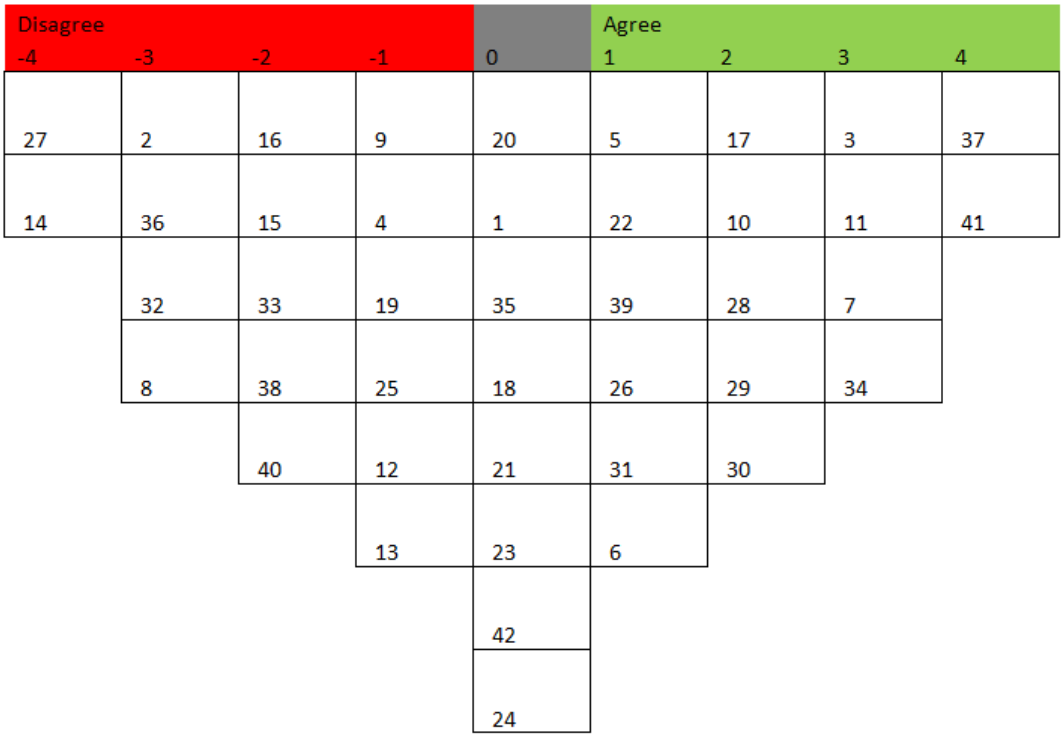
Once the idealised Q-sorts are generated for each factor, the interpretation renders a series of summarised accounts on the viewpoints expressed by each factor. Watts and Stenner (2012) advocate generating a 'Crib sheet' for each factor for an effective data interpretation as it ensures every item in the factor is analysed. The crib sheet provided a systematic, holistic and consistent approach to factor interpretation and was used in this research.

**Table 3.3-10**

*Factor 1 - Z scores*

| Rank | Statement | Z-SCORE |
|---|---|---|
| 1 | 37. It will be nice to see more green products in our indust | 1.923 |
| 2 | 41. Manufacturers need to innovate and produce more green pr | 1.923 |
| 3 | 3. Safety features in a product is more important than green | 1.403 |
| 4 | 11. Government needs to enforce and create demand for green p | 1.403 |
| 5 | 7. Customers use our products in non-green process | 1.348 |
| 6 | 34. I use internet and pdf catalogues instead of paper which | 1.348 |
| 7 | 17. Customers accept green products only if they get better | 1.248 |
| 8 | 10. I hardly think about green behaviour in my job | 1.039 |
| 9 | 28. Meeting specifications is more important than providing | 1.039 |
| 10 | 29. Servicing and repairing a product is greener then buying | 0.784 |
| 11 | 30. I would need training if I have to promote green attribu | 0.674 |
| 12 | 5. Customers mainly look at price when purchasing a product | 0.574 |
| 13 | 22. Most of our our products have green features in them | 0.519 |
| 14 | 39. The amount of green products in the industry has decreas | 0.519 |
| 15 | 26. Customers use our products in green processes l | 0.465 |
| 16 | 31. There will be demand for green products in the future | 0.365 |
| 17 | 6. Customers care about green behaviour and demand green products | 0.365 |
| 18 | 20. There are products in our business which are classified | 0.155 |
| 19 | 1. The client has to decide if they need green products | 0.155 |
| 20 | 35. Green products are expensive | 0.1 |
| 21 | 18. We practise green initiatives only during the manufactur | 0 |
| 22 | 21. I have had success promoting green products | -0.1 |
| 23 | 23. There are a lot of green products in our industry | -0.155 |
| 24 | 42. Products from competitors have more green features than | -0.155 |
| 25 | 24. I know the green attributes of our products | -0.31 |
| 26 | 9. We have several green initiatives within our business | -0.365 |
| 27 | 4. Contractors show interest in green products | -0.365 |
| 28 | 19. We use green packaging for our products | -0.465 |
| 29 | 25. I participate and support the green initiatives | -0.519 |
| 30 | 12. Cost savings is the main reason for green initiatives li | -0.574 |
| 31 | 13. Green initiatives are common in our industry | -0.674 |
| 32 | 16. Green marketing is not relevant to our industry | -0.729 |
| 33 | 15. We need more focus on green marketing in our industry | -0.729 |
| 34 | 33. I use green attributes of our products to differentiate | -0.984 |
| 35 | 38. I look for greener ways to market our products | -1.194 |
| 36 | 40. Customers don't like the term green | -1.248 |
| 37 | 2. It is cheaper to replace our product than repairing it, e | -1.248 |
| 38 | 36. I don't care about green marketing | -1.348 |
| 39 | 32. I use green forms of transport to visit customers | -1.403 |
| 40 | 8. There is an interest in green products among customers | -1.403 |
| 41 | 27. The products I sell are recyclable | -1.458 |
| 42 | 14. Green products come to my mind when talking to my customers | -1.923 |

**Figure 3-3 Q-sort for factor 1 – test analysis**




The aim of the test analysis was to ensure that the data collected was processed effectively using the PQ method software. As the test analysis was done with only 4 participants, doing a full interpretation was not warranted as this would be done with our full P-sets of 21 participants which is explained in section 4.

# Chapter 4 Analysis and results

The initial Q sort and test analysis performed with 4 participants proved satisfactory. Hence, all the remaining participants were then invited to perform the Q sorts online. The data was collected and analysed using the PQ method software and various factors were extracted which are explained in this chapter.

## 4.1 Q study A (Australia)

The Q study A of the research utilised the same concourse, Q set, quasi normal distribution and factor analysis software and principle as explained in section 3.3.

### 4.1.1 Q study A P-set

The P set for the study comprised of 21 participants with experience in the valve industry in Australia in marketing related functions. The participant details along with their titles, date they completed the Q sorts and time they spent to complete the Q sorts is provided in Table 4.1-1.

It was also ensured that the participants had different levels of experience in the industry from 2 to 40 years. Applying the 2:1 rule to the 42 statements in the Q set, the maximum number of participants was determined to be 21 people (Webler et al., 2009). A total of 24 participants were contacted of which 21 completed and submitted their Q sorts. The Q sorts were collected between July and August 2013 and the participants took an average of 30 minutes to complete the sorts.

**Table 4.1-1**

*Q study A P-set*

| Participant | Company | Gender | Experience (years) | Q sort Date | Q sort -Time taken (min:sec) | Title |
|---|---|---|---|---|---|---|
| AU201 | ORG-AU1 | M | 8 | 1/07/2013 | 11:58 | Account Manager |
| AU202 | ORG-AU1 | M | 2 | 1/07/2013 | 11:27 | Account Manager |
| AU203 | ORG-AU1 | M | 10 | 1/07/2013 | 26:22 | Product Manager |
| AU204 | ORG-AU2 | M | 6 | 1/07/2013 | 14:29 | Account Manager |
| AU205 | ORG-AU1 | M | 19 | 2/07/2013 | 22:54 | Business Dev. Manager |
| AU206 | ORG-AU3 | M | 15 | 2/07/2013 | 17:24 | Business Dev. Manager |
| AU207 | ORG-AU2 | M | 5 | 3/07/2013 | 28:46 | Business Dev. Manager |
| AU208 | ORG-AU1 | M | 30 | 4/07/2013 | 28:33 | Business Dev. Manager |
| AU209 | ORG-AU1 | M | 40 | 4/07/2013 | 20:39 | Product Manager |
| AU210 | ORG-AU1 | M | 10 | 10/07/2013 | 20:24 | Product Manager |
| AU211 | ORG-AU4 | M | 40 | 16/07/2013 | 27:04 | Account Manager |
| AU212 | ORG-AU2 | M | 8 | 16/07/2013 | 30:03 | Account Manager |
| AU213 | ORG-AU1 | M | 15 | 17/07/2013 | 22:51 | Product Manager |
| AU214 | ORG-AU5 | M | 6 | 22/07/2013 | 15:33 | Business Dev. Manager |
| AU215 | ORG-AU1 | M | 5 | 22/07/2013 | 41:14 | Account Manager |
| AU216 | ORG-AU6 | M | 23 | 22/07/2013 | 08:57 | Sales Manager |
| AU217 | ORG-AU7 | M | 25 | 25/07/2013 | 16:33 | Sales Manager |
| AU218 | ORG-AU5 | M | 5 | 29/07/2013 | 19:41 | Product Manager |
| AU219 | ORG-AU8 | F | 8 | 2/08/2013 | 20:16 | Account Manager |
| AU220 | ORG-AU1 | M | 25 | 2/08/2013 | 24:06 | Product Manager |
| AU221 | ORG-AU9 | M | 15 | 12/08/2013 | 19:38 | Sales Manager |

### 4.1.2 Q study A – Factor analysis

The 21 Q sorts were entered in the PQ method software. The Q sorts were initially correlated with each other and the correlation matrix was calculated. The Q sorts were analysed using PCA and the un-rotated factor score were calculated.

Watts and Stenner (2012) advocate using factors which have a minimum of 4 significant loadings in them. The un-rotated factor scores were analysed initially by eyeballing and it was noted that there were not enough loading on factors other than factor 1. The factors were then rotated using Varimax rotation and 5, 4 and 3 factor solutions were compared in PQ method. The 5 factor solution was determined unsuitable as there were not enough loadings on all the factors. The 4 factor solution did not have enough loadings as well, but when the Varimax solution was rotated further, it was possible to have the minimum 4 loadings for each factor. Stenner and Watts (2012) recommend that the inter correlation between factors should be less than significance level of 2.58 x standard error, which for this study represented a score of less than 40. However, the inter correlation between factor 1 and 2 considering a 4 factor solution was quite high with a score of 41. This high inter correlation between factors 1 and 2 implied they both expressed similar views and hence a 3 factor solution was considered.

The varimax rotation with 3 factors was extracted. In order to obtain 4 or more loadings on a factor, factors 3 & 2 were further rotated manually by 13°. There was a lot of confounding at the significance level of 40; hence the significance level was raised to 48 and above. The 3 factor solution resulted in 19 participants loading on the 3 factors – factor 1 with 10 loadings, factor 2 with 5 loadings and factor 3 with 4 loadings. The factor matrix and the factor characteristics are represented in Table 4.1-2 and Table 4.1-3 respectively.

**Table 4.1-2**

*Factor matrix with a X indicating a defining sort*

| | Loadings | | |
|---|---|---|---|
| **QSORT** | **1** | **2** | **3** |
| 1 AU201 | 0.081 | 0.0484 | 0.5592X |
| 2 AU202 | 0.7190X | 0.0873 | 0.2465 |
| 3 AU203 | 0.6989X | 0.2489 | -0.0626 |
| 4 AU204 | 0.7620X | 0.0212 | 0.11 |
| 5 AU205 | 0.2695 | 0.5472X | 0.3478 |
| 6 AU206 | 0.5688X | 0.3213 | 0.0111 |
| 7 AU207 | 0.7511X | -0.1767 | 0.2793 |
| 8 AU208 | 0.2659 | 0.4202 | 0.1904 |
| 9 AU209 | 0.5482X | 0.3018 | 0.1644 |
| 10 AU210 | 0.0276 | -0.1385 | 0.7302X |
| 11 AU211 | -0.2116 | 0.4775 | 0.5167X |
| 12 AU212 | 0.6714X | -0.1075 | 0.2347 |
| 13 AU213 | -0.1998 | 0.5418X | 0.4687 |
| 14 AU214 | 0.7085X | -0.0084 | -0.286 |
| 15 AU215 | 0.0398 | 0.8495X | 0.186 |
| 16 AU216 | 0.3046 | -0.0371 | 0.7020X |
| 17 AU217 | 0.4717 | 0.5003X | 0.3591 |
| 18 AU218 | 0.6280X | 0.1617 | 0.4563 |
| 19 AU219 | 0.5581X | 0.3487 | 0.3547 |
| 20 AU220 | 0.4257 | 0.3395 | 0.4326 |
| 21 AU221 | 0.1861 | 0.7804X | 0.059 |
| % expl.Var. | 25 | 15 | 14 |

**Table 4.1-3**

*Factor characteristics*

| | Factors | | |
|---|---|---|---|
| | **1** | **2** | **3** |
| No. of Defining Variables | 10 | 5 | 4 |
| Average Rel. Coef. | 0.8 | 0.8 | 0.8 |
| Composite Reliability | 0.976 | 0.952 | 0.941 |
| S.E. of Factor Z-Scores | 0.156 | 0.218 | 0.243 |

The factors were inter-correlated and represented in Table 4.1-4. The correlation scores were lower than 40, and a 3 factor solution was deemed suitable for the Q study A.

**Table 4.1-4**

*Correlations between factor scores*

| Factors | 1 | 2 | 3 |
|---|---|---|---|
| 1 | 1 | 0.311 | 0.299 |
| 2 | 0.311 | 1 | 0.296 |
| 3 | 0.299 | 0.296 | 1 |

After the factors were extracted, Q analysis was performed in PQ method and the factor scores (Z-scores) for each statement in the factors was calculated. The factor scores for the statements and the corresponding rank for that factor is represented in Table 4.1-5.

**Table 4.1-5**

*Factor scores with corresponding ranks*

| | Factors | | | | | |
|---|---|---|---|---|---|---|
| **Statement No.** | **1** | **Rank** | **2** | **Rank** | **3** | **Rank** |
| 1. The client has to decide if they need green products | 0.85 | +1 | -0.25 | -1 | -0.21 | 0 |
| 2. It is cheaper to replace our product than repairing it, even if repairing is greener | -0.7 | -1 | -1.33 | -3 | -0.18 | 0 |
| 3. Safety features in a product is more important than green attributes | 1.1 | +3 | 0.52 | +1 | 1.65 | +3 |
| 4. Contractors show interest in green products | -0.67 | -1 | -0.16 | 0 | -1.93 | -4 |
| 5. Customers mainly look at price when purchasing a product | 1.19 | +3 | -0.42 | -1 | 0.1 | 0 |
| 6. Customers care about green behaviour and demand green products | -1.01 | -2 | -0.01 | 0 | 0.08 | 0 |
| 7. Customers use our products in non-green process | 0.98 | +2 | 1.05 | +2 | 2.27 | +4 |
| 8. There is an interest in green products among customers | -1.28 | -3 | 0.54 | +1 | 0.44 | +1 |
| 9. We have several green initiatives within our business | -0.23 | 0 | 0.08 | 0 | -0.86 | -2 |
| 10. I hardly think about green behaviour in my job | 0.51 | +1 | -1.88 | -4 | -0.81 | -1 |
| 11. Government needs to enforce and create demand for green products to enable businesses to manufacture green products | 1.48 | +3 | 1.21 | +3 | -1.65 | -4 |
| 12. Cost savings is the main reason for green initiatives like saving water and electricity | 0.67 | +1 | 0.14 | 0 | 0.98 | +2 |
| 13. Green initiatives are common in our industry | -1.59 | -4 | -0.19 | 0 | -1.21 | -3 |
| 14. Green products come to my mind when talking to my customers | -1.36 | -3 | 0.75 | +2 | -1.08 | -2 |
| 15. We need more focus on green marketing in our industry | 0.5 | +1 | -0.2 | 0 | 0.97 | +2 |
| 16. Green marketing is not relevant to our industry | -0.02 | 0 | -1.36 | -3 | -0.44 | -1 |
| 17. Customers accept green products only if they get better price and delivery over standard product | 0.78 | +1 | -0.51 | -1 | 0.23 | 0 |
| 18. We practise green initiatives only during the manufacturing stage | -0.62 | -1 | -1 | -2 | -0.63 | -1 |
| 19. We use green packaging for our products | -0.42 | 0 | 0.04 | 0 | -0.24 | -1 |
| 20. There are products in our business which are classified as green products | -0.13 | 0 | 0.58 | +1 | 1.34 | +3 |
| 21. I have had success promoting green products | -0.86 | -2 | -0.03 | 0 | 0.03 | 0 |
| 22. Most of our our products have green features in them | -0.3 | 0 | -0.71 | -1 | -1.27 | -3 |
| 23. There are a lot of green products in our industry | -1.32 | -3 | -0.45 | -1 | -1.34 | -3 |

**Table 4.1-5 Factor scores with corresponding ranks (continued)**

| | Factors | | | | | |
|---|---|---|---|---|---|---|
| **Statement No.** | **1** | **Rank** | **2** | **Rank** | **3** | **Rank** |
| 24. I know the green attributes of our products | -0.64 | -1 | 0.78 | +2 | 1.36 | +3 |
| 25. I participate and support the green initiatives we have in our business | -0.73 | -1 | 0.5 | +1 | 0.44 | +1 |
| 26. Customers use our products in green processes like waste water treatment | 1.07 | +2 | 1.59 | +3 | 1.4 | +3 |
| 27. The products I sell are recyclable | -0.29 | 0 | 0.19 | +1 | 0.5 | +1 |
| 28. Meeting specifications is more important than providing a green product | 1.8 | +4 | -0.52 | -1 | 1.08 | +2 |
| 29. Servicing and repairing a product is greener then buying a new product | 0.34 | 0 | 0.46 | +1 | 1.72 | +4 |
| 30. I would need training if I have to promote green attributes of our products | 1.03 | +2 | -1.18 | -3 | -0.93 | -2 |
| 31. There will be demand for green products in the future | 1.09 | +2 | 2.03 | +4 | 0.26 | +1 |
| 32. I use green forms of transport to visit customers | -1.4 | -4 | -0.87 | -2 | -1.3 | -3 |
| 33. I use green attributes of our products to differentiate from competitors if our price is high | -1.23 | -2 | 1.11 | +2 | 0.32 | +1 |
| 34. I use internet and pdf catalogues instead of paper which is green | 0.99 | +2 | 1.22 | +3 | 0.24 | +1 |
| 35. Green products are expensive | 0.43 | +1 | -0.88 | -2 | 0.8 | +2 |
| 36. I don't care about green marketing | -1.25 | -3 | -1.74 | -4 | 0.15 | 0 |
| 37. It will be nice to see more green products in our industry | 1.58 | +3 | 1.73 | +3 | -0.12 | 0 |
| 38. I look for greener ways to market our products | -0.88 | -2 | 0.71 | +2 | -0.92 | -2 |
| 39. The amount of green products in the industry has decreased over time | 0.09 | 0 | -1.48 | -3 | -1.12 | -2 |
| 40. Customers don't like the term green | -0.86 | -2 | -0.83 | -2 | 0.59 | +2 |
| 41. Manufacturers need to innovate and produce more green products | 1.85 | +4 | 1.81 | +4 | -0.5 | -1 |
| 42. Products from competitors have more green features than our products | -0.52 | -1 | -1.05 | -2 | -0.21 | -1 |

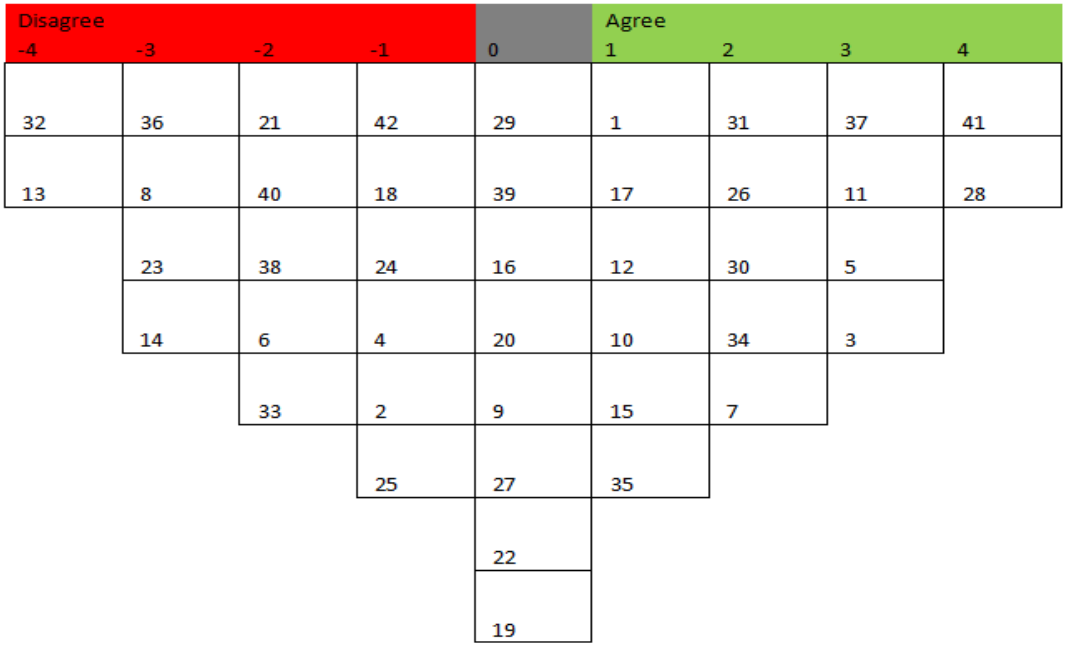
## 4.2 Q study A – results

The extracted factors were interpreted using the crib sheet method (Watts & Stenner, 2012). The crib sheet provided a systematic, holistic and consistent approach to factor interpretation and ensured each item in a factor was considered, instead of only considering factors with high or low ranks.

### 4.2.1 Factor 1 A interpretation

Using the statement ranks for each factor from Table 4.1-5 on page number 76, the idealised Q sort was created for the factor 1 and is represented in Figure 4-1.

**Figure 4-1 Idealised Q sort for Q study A - factor 1**




The rank for each statement in factor 1 was compared against the rank in factors 2 and 3 and the crib sheet was generated. The crib sheet included the items ranked +4 in factor 1, items ranked higher in factor 1 compared to the ranks in other factors, items ranked lower in factor 1 compared to other factors and items ranked -4 in factor 1. When comparing the items with ranks higher and lower in factor 1, the item was included in the crib sheet

even if the score was tied with other factors. The crib sheet for factor 1 is as follows:

**Items ranked +4 in factor 1:**

| | |
|---|---|
| 28. Meeting specifications is more important than providing a green product | +4 |
| 41. Manufacturers need to innovate and produce more green products | +4 |

**Items ranked higher in factor 1 compared to other factors, with their corresponding score:**

| | |
|---|---|
| 1. The client has to decide if they need green products | +1 |
| 3. Safety features in a product is more important than green attributes | +3 |
| 5. Customers mainly look at price when purchasing a product | +3 |
| 9. We have several green initiatives within our business | 0 |
| 10. I hardly think about green behaviour in my job | +1 |
| 11. Government needs to enforce and create demand for green products | +3 |
| 16. Green marketing is not relevant to our industry | 0 |
| 17. Customers accept green products only if they get better price and delivery over standard product | +1 |
| 18. We practise green initiatives only during the manufacturing stage | -1 |
| 19. We use green packaging for our products | 0 |
| 22. Most of our our products have green features in them | 0 |
| 30. I would need training if I have to promote green attributes of our products | +2 |
| 37. It will be nice to see more green products in our industry | +3 |
| 39. The amount of green products in the industry has decreased over time | 0 |
| 42. Products from competitors have more green features than our products | -1 |

**Items ranked lower in factor 1 compared to other factors, with their corresponding score:**

| | |
|---|---|
| 6. Customers care about green behaviour and demand green products | -2 |
| 7. Customers use our products in non-green process | +2 |
| 8. There is an interest in green products among customers | -3 |
| 14. Green products come to my mind when talking to my customers | -3 |

| | |
|---|---|
| 20. There are products in our business which are classified as green products | 0 |
| 21. I have had success promoting green products | -2 |
| 23. There are a lot of green products in our industry | -3 |
| 24. I know the green attributes of our products | -1 |
| 25. I participate and support the green initiatives we have in our business | -1 |
| 26. Customers use our products in green processes like waste water treatment | +2 |
| 27. The products I sell are recyclable | 0 |
| 29. Servicing and repairing a product is greener then buying a new product | 0 |
| 33. I use green attributes of our products to differentiate from competitors if our price is high | -2 |
| 38. I look for greener ways to market our products | -2 |
| 40. Customers don't like the term green | -2 |

### Items ranked -4 in factor 1

| | |
|---|---|
| 13. Green initiatives are common in our industry | -4 |
| 32. I use green forms of transport to visit customers | -4 |

### Other items of importance

| | |
|---|---|
| 4. Contractors show interest in green products | -1 |
| 15. We need more focus on green marketing in our industry | +1 |
| 31. There will be demand for green products in the future | +2 |
| 36. I don't care about green marketing | -3 |

### 4.2.2 Factor 1A results

**The uninterested**

In the description below (and for the subsequent factor results for both study A and B) the statements discussed are followed by numbers in brackets. The first of these refers to the number of the statement being highlighted, and the second refers to the rank for the statement in the factor array. For example: “They feel that there is no interest amongst customers on green products (8: -3)” refers to the description of statement number 8, which has a rank of -3 in the factor array. As part of the online data collection process and the flash Q Q-sorts, participants were asked to provide optional feedback on why they assigned specific ranks to certain statements. Any such feedback provided by the participant is shown in the following sections as direct quotes along with the participant id.

Factor 1A represents 25% of the study variance and 10 participants significantly associate with this viewpoint.

**Table 4.2-1**

*Factor 1A participants*

| Participant ID | Gender | Experience | Title |
|---|---|---|---|
| AU202 | M | 2 years | Account Manager |
| AU203 | M | 10 years | Product Manager |
| AU204 | M | 6 years | Account Manager |
| AU206 | M | 15 years | Business Dev. Manager |
| AU207 | M | 5 years | Business Dev. Manager |
| AU209 | M | 40 years | Product Manager |
| AU212 | M | 8 years | Account Manager |
| AU214 | M | 6 years | Business Dev. Manager |
| AU218 | M | 5 years | Product Manager |
| AU219 | F | 8 years | Account Manager |

The marketers representing this factor believe that green marketing initiatives are not common in their industry (13: -4) and that there are not many green products in their industry (23: -3) (42: -1). Marketer AU 206 bluntly rejects green marketing by saying that it is “not applicable in our line of business. We do not have any green products in our portfolio”. Others, such as marketer

AU212 supports this by commenting that “I cannot recall one single time I was asked if a product I was a green product”; while marketer AU 218 reaffirms that “no valve manufacturer that I have heard of has ever mentioned green products in any way”.

This lack of interest from marketers stems from their customers who show no interest on green products (8: -3) (6: -2) (4: -1). The customers do not care about green products, unless it is cheaper than standard products (17: +1) (5: +3). Marketer AU 207 confirms this importance of price by admitting that:

> Contractors are motivated almost exclusively by price. In my experience green product credentials don't enter into the buying decision. In a technical industry meeting the product spec is the foremost consideration to qualify for an order. Green product credentials can be an added benefit but in my experience they don't garner a higher price.

Apart from price, the customers also focus on other needs such as meeting industry specifications (28: +4) and safety features in valve products (3: +3), all of which are deemed more important over green attributes of the products they purchase. Marketer AU 206 reaffirms this by mentioning that “we can only follow the requirements of the end client. Safety is the number one priority”.

As a result of this lack of interest in green products from the customers, these marketers do not pursue green marketing (14: -3) and hardly think about promoting green products (38: -2) (10: +1). Even at a personal level, these marketers do not use any green form of transport (32: -4) and do not participate in any green initiatives within their business (25: -1).

However, these marketers are not indifferent towards green marketing (36: -3). They wish that they had more green products (37: +3) in their industry. They feel that there will be a greater demand for green products in the future

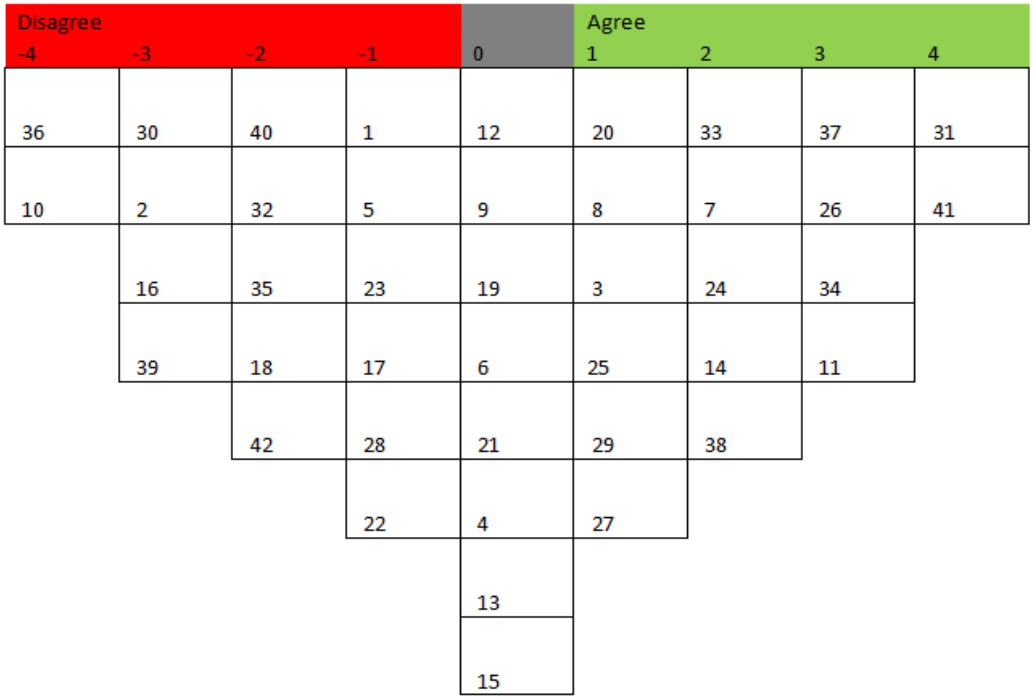
(31: +2), if government can create a demand for these products (11: +3) and if manufacturers can produce innovative green products (41: +4)

The story we get from this factor is that these marketers do not pursue green marketing, and simply reject the need for it due to the lack of interest from customers. The marketers from this factor are therefore described as ‘uninterested’ towards green marketing.

### 4.2.3 Factor 2A interpretation

Using the statement ranks for each factor from Table 4.1-5 on page number 76, the idealised Q sort was created and is represented in Figure 4-2.

**Figure 4-2 Idealised Q sort for Q study A - factor 2**




The rank for each statement in factor 2 was compared against the rank in factors 2 and 3 and the crib sheet was generated. The crib sheet included the items ranked +4 in factor 2, items ranked higher in factor 2 compared to the ranks in other factors, items ranked lower in factor 2 compared to other factors and items ranked -4 in factor 2. When comparing the items with ranks higher and lower in factor 2, the item was included in the crib sheet even if the score was tied with other factors. The crib sheet for factor 2 is as follows:

**Items ranked +4 in factor 2:**

| | |
|---|---|
| 31. There will be demand for green products in the future | +4 |
| 41. Manufacturers need to innovate and produce more green products | +4 |

**Items ranked higher in factor 2 compared to other factors, with their corresponding score:**

| | |
|---|---|
| 4. Contractors show interest in green products | 0 |
| 6. Customers care about green behaviour and demand green products | 0 |
| 8. There is an interest in green products among customers | +1 |
| 9. We have several green initiatives within our business | 0 |
| 11. Government needs to enforce and create demand for green products | +3 |
| 13. Green initiatives are common in our industry | 0 |
| 14. Green products come to my mind when talking to my customers | +2 |
| 19. We use green packaging for our products | 0 |
| 21. I have had success promoting green products | 0 |
| 23. There are a lot of green products in our industry | -1 |
| 25. I participate and support the green initiatives we have in our business | +1 |
| 26. Customers use our products in green processes like waste water treatment | +3 |
| 27. The products I sell are recyclable | +1 |
| 32. I use green forms of transport to visit customers | -2 |
| 33. I use green attributes of our products to differentiate from competitors if our price is high | +2 |
| 34. I use internet and pdf catalogues instead of paper which is green | +3 |
| 37. It will be nice to see more green products in our industry | +3 |
| 38. I look for greener ways to market our products | +2 |

**Items ranked lower in factor 2 compared to other factors, with their corresponding score:**

| | |
|---|---|
| 1. The client has to decide if they need green products | -1 |

| | |
|---|---|
| 2. It is cheaper to replace our product than repairing it, even if repairing is greener | -3 |
| 3. Safety features in a product is more important than green attributes | +1 |
| 5. Customers mainly look at price when purchasing a product | -1 |
| 7. Customers use our products in non-green process | +2 |
| 12. Cost savings is the main reason for green initiatives like saving water and electricity | 0 |
| 15. We need more focus on green marketing in our industry | 0 |
| 16. Green marketing is not relevant to our industry | -3 |
| 17. Customers accept green products only if they get better price and delivery over standard product | -1 |
| 18. We practise green initiatives only during the manufacturing stage | -2 |
| 28. Meeting specifications is more important than providing a green product | -1 |
| 30. I would need training if I have to promote green attributes of our products | -3 |
| 35. Green products are expensive | -2 |
| 39. The amount of green products in the industry has decreased over time | -3 |
| 40. Customers don't like the term green | -2 |
| 42. Products from competitors have more green features than our products | -2 |

### Items ranked -4 in factor 2

| | |
|---|---|
| 10. I hardly think about green behaviour in my job | -4 |
| 36. I don't care about green marketing | -4 |

### Other items of importance

| | |
|---|---|
| 24. I know the green attributes of our products | -3 |

### 4.2.4 Factor 2A results

**The highly interested**

Factor 2A represents 15% of the study variance and 5 participants significantly associate with this viewpoint.

**Table 4.2-2**

*Factor 2A participants*

| Participant ID | Gender | Experience | Title |
|---|---|---|---|
| AU205 | M | 19 years | Business Dev. Manager |
| AU213 | M | 15 years | Product Manager |
| AU215 | M | 5 years | Account Manager |
| AU217 | M | 25 years | Sales Manager |
| AU221 | M | 15 years | Sales Manager |

The marketers representing this factor strongly support green marketing and green behaviour in general. This is evident from the comments of one of the marketers AU215 who mentioned as follows:

> The earth is already over populated & it is becoming more difficult to sustain with food & water resources for the current population. I constantly think about green behaviour in my job & everyday life I walk or ride my bicycle to the shops or to visit friends wherever possible. I constantly avoid using paper wherever possible. I contact customer by phone or E-mail rather than drive to their factory site to meet them in person.

Marketer AU221 also holds a similar view on the need for green behaviour. He justifies that “I think about the world we are leaving to our descendants which must be a good and safe place to live. Fossil fuels are coming to an end hence we need alternative and green sources of energy to replace them”.

Due to such personal interest in green behaviour, these marketers are highly interested in green marketing (36: -4) and regularly think about promoting

green products to their customers (10: -4). They look for greener ways to market their products (38: +2) and use green initiatives such as using electronic catalogues instead of paper ones (34: +3). They also participate and support the green initiatives within their business (25: +1) and promote more recyclable products (27: +1).

The marketers also regularly use green attributes when talking to their customers to differentiate their products from that of the competitors (33: +2) (14: +2).

This interest and regular use of green marketing by these marketers seems to pay off with their customers (8: +1). Unlike the marketers from factor 1A, the customers of these marketers do not seem to focus much on price (5: -1) or specification (28: -1) or faster delivery (17: -1) when looking at valve products. Instead, these customers show interest in green products (40: -2) and use these products in green processes (26: +3).

As a result, these marketers feel that green marketing is highly relevant to their industry (16: -3). While the marketers feel that green products in the industry have increased over time (39: -3), they feel that there should be even more green products available to them (37: +3). They believe that the future is bright for green products and there will be a strong demand for green products in the future (31: +4).

In summary, these marketers show a keen interest in green marketing and in promoting green behaviour. Their efforts seem to work with the customers as well, who also show an interest in green products. These marketers therefore fit under the label of ‘highly interested’ as they strongly support green marketing.

### 4.2.5 Factor 3A interpretation

Using the statement ranks for each factor from Table 4.1-5 on page number 76, the idealised Q sort was created for the factor 1 and is represented in Figure 4-3.

**Figure 4-3 Idealised Q sort for Q study A - factor 3**

| Disagree | | | | | Agree | | | |
|---|---|---|---|---|---|---|---|---|
| -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 |
| 11 | 13 | 9 | 42 | 17 | 27 | 28 | 3 | 7 |
| 4 | 22 | 38 | 19 | 36 | 25 | 12 | 26 | 29 |
| | 32 | 30 | 16 | 5 | 8 | 15 | 24 | |
| | 23 | 14 | 41 | 6 | 33 | 35 | 20 | |
| | | 39 | 18 | 21 | 31 | 40 | | |
| | | | 10 | 37 | 34 | | | |
| | | | | 2 | | | | |
| | | | | 1 | | | | |

The rank for each statement in factor 3 was compared against the rank in factors 2 and 3 and the crib sheet was generated. The crib sheet included the items ranked +4 in factor 3, items ranked higher in factor 3 compared to the ranks in other factors, items ranked lower in factor 3 compared to other factors and items ranked -4 in factor 3. When comparing the items with ranks higher and lower in factor 3, the item was included in the crib sheet even if the score was tied with other factors. The crib sheet for factor 3 is as follows:

**Items ranked +4 in factor 3:**

| | |
|---|---|
| 7. Customers use our products in non-green process | +4 |
| 29. Servicing and repairing a product is greener then buying a new product | +4 |

**Items ranked higher in factor 3 compared to other factors, with their corresponding score:**

| | |
|---|---|
| 2. It is cheaper to replace our product than repairing it, even if repairing is greener | 0 |
| 3. Safety features in a product is more important than green attributes | +3 |
| 6. Customers care about green behaviour and demand green products | 0 |
| 8. There is an interest in green products among customers | +1 |
| 12. Cost savings is the main reason for green initiatives like saving water and electricity | +2 |
| 15. We need more focus on green marketing in our industry | +2 |
| 18. We practise green initiatives only during the manufacturing stage | -1 |
| 20. There are products in our business which are classified as green products | +3 |
| 21. I have had success promoting green products | 0 |
| 24. I know the green attributes of our products | +3 |
| 25. I participate and support the green initiatives we have in our business | +1 |
| 26. Customers use our products in green processes like waste water treatment | +3 |
| 27. The products I sell are recyclable | +1 |
| 35. Green products are expensive | +2 |
| 36. I don't care about green marketing | 0 |
| 40. Customers don't like the term green | +2 |
| 42. Products from competitors have more green features than our products | -1 |

**Items ranked lower in factor 3 compared to other factors, with their corresponding score:**

| | |
|---|---|
| 9. We have several green initiatives within our business | -2 |
| 19. We use green packaging for our products | -1 |

| | |
|---|---|
| 22. Most of our our products have green features in them | -3 |
| 23. There are a lot of green products in our industry | -3 |
| 31. There will be demand for green products in the future | +1 |
| 34. I use internet and pdf catalogues instead of paper which is green | +1 |
| 37. It will be nice to see more green products in our industry | 0 |
| 38. I look for greener ways to market our products | -2 |
| 41. Manufacturers need to innovate and produce more green products | -1 |

### Items ranked -4 in factor 3

| | |
|---|---|
| 4. Contractors show interest in green products | -4 |
| 11. Government needs to enforce and create demand for green products | -4 |

### Other items of importance

| | |
|---|---|
| 5. Customers mainly look at price when purchasing a product | 0 |
| 10. I hardly think about green behaviour in my job | -1 |
| 13. Green initiatives are common in our industry | -3 |
| 14. Green products come to my mind when talking to my customers | -2 |
| 16. Green marketing is not relevant to our industry | -1 |
| 17. Customers accept green products only if they get better price and delivery over standard product | 0 |
| 28. Meeting specifications is more important than providing a green product | +2 |
| 30. I would need training if I have to promote green attributes of our products | -2 |
| 33. I use green attributes of our products to differentiate from competitors if our price is high | +1 |

### 4.2.6 Factor 3A results

**The mildly interested**

Factor 3A represents 14% of the study variance and 4 participants significantly associate with this viewpoint. The views of these marketers fit somewhere between that of marketers from factors 1A and 2A.

**Table 4.2-3**

*Factor 3A participants*

| Participant ID | Gender | Experience | Title |
|---|---|---|---|
| AU201 | M | 8 years | Account Manager |
| AU210 | M | 10 years | Product Manager |
| AU211 | M | 40 years | Account Manager |
| AU216 | M | 23 years | Sales Manager |

The marketers representing this factors show mild interest in green marketing (10: -1) and occasionally promote green products (33: +1). They know green features in their products (24: +3), which they sometimes use to differentiate their products from competition (33: +1). However, these marketers are not motivated to actively engage in green marketing (38: -2) (14: -2). They claim that there is a lack of green products within their business (22: -3) and within their overall industry (13: -3) (23: -3).

As a result, their customers do not show much interest in green products (40: +2) (29: +4) (6: 0) and do not demand green products (4: -4). The customers therefore focus mainly on products meeting other specifications (28: +2) and safety features (3: +3).

The marketers from this factor overall show sporadic interest in green marketing. They do not consistently pursue it like the ‘highly interested’ marketers. At the same time, they do not completely reject it like the ‘uninterested’ marketers. Therefore these marketers fit under the description of ‘mildly interested’ with regards to their use of green marketing.

## 4.3 Q study B (India)

The second Q study utilised the same concourse as in section 3.3.3.1, Q set as in section 3.3.3.2, quasi normal distribution as in section 3.3.4.2 and factor analysis software and principle as explained in section 3.3.4.3.

### 4.3.1 Q study B P-set

The P set for study B comprised of 21 participants who were working in the valve industry and were of Indian ethnicity working in sales and marketing functions in India and overseas. The participant details along with their titles, date they completed the Q sorts and time they spent to complete the Q sorts is provided in Table 4.3-1.

As with study A, the P-set was selected such that the participants were directly related to the valve industry in sales and marketing functions. It was also ensured that the participants had different levels of experience in the industry from 1 to 35 years.

Applying the 2:1 rule to the 42 statements in the Q set, the maximum number of participants was determined to be 21 people. A total of 25 participants were contacted of which 21 completed and submitted their Q sorts.
The Q sorts were collected between July and October 2013 and the participants took an average of 30 minutes to complete the sorts.

**Table 4.3-1**

*Q study B P-set*

| Participant ID | Company | Gender | Experience | Q sort Date | Q sort -Time taken min:sec | Title |
|---|---|---|---|---|---|---|
| IN301 | ORG-IN1 | M | 25 years | 2/07/2013 | 33:32 | Business Dev. Manager |
| IN302 | ORG-IN2 | M | 6 years | 15/07/2013 | 07:43 | Business Dev. Manager |
| IN303 | ORG-IN3 | M | 10 years | 16/07/2013 | 16:40 | Business Dev. Manager |
| IN304 | ORG-IN4 | M | 24 years | 20/07/2013 | 13:38 | Business Dev. Manager |
| IN305 | ORG-IN5 | M | 15 years | 21/07/2013 | 10:36 | Sales Manager |
| IN306 | ORG-IN6 | F | 32 years | 21/07/2013 | 16:45 | Sales Manager |
| IN307 | ORG-IN7 | M | 8 years | 22/07/2013 | 28:48 | Product Manager |
| IN308 | ORG-IN8 | M | 7 years | 23/07/2013 | 10:48 | Account Manager |
| IN309 | ORG-IN9 | M | 13 years | 23/07/2013 | 16:12 | Sales Manager |
| IN310 | ORG-IN10 | M | 2 years | 24/07/2013 | 17:31 | Account Manager |
| IN311 | ORG-IN6 | M | 26 years | 25/07/2013 | 40:24 | Sales Manager |
| IN312 | ORG-IN7 | M | 5 years | 27/07/2013 | 14:13 | Account Manager |
| IN313 | ORG-IN11 | M | 8 years | 29/07/2013 | 35:24 | Account Manager |
| IN314 | ORG-IN7 | M | 4 years | 2/08/2013 | 13:06 | Account Manager |
| IN315 | ORG-IN6 | M | 2 years | 5/08/2013 | 19:42 | Business Dev. Manager |
| IN316 | ORG-IN12 | M | 10 years | 14/08/2013 | 18:04 | Account Manager |
| IN317 | ORG-IN2 | M | 11 years | 14/10/2013 | 08:23 | Business Dev. Manager |
| IN318 | ORG-IN2 | F | 1 year | 14/10/2013 | 12:40 | Account Manager |
| IN319 | ORG-IN12 | M | 3 years | 14/10/2013 | 57:48 | Account Manager |
| IN320 | ORG-IN7 | M | 25 years | 23/10/2013 | 17:32 | Product Manager |
| IN321 | ORG-IN13 | M | 20 years | 28/10/2013 | 14:18 | Sales Manager |

### 4.3.2 Q study B – Factor analysis

The 21 Q sorts were entered in the PQ method software. The Q sorts were initially correlated with each other and the correlation matrix was calculated. The Q sorts were analysed using PCA and the un-rotated factor scores were calculated.

To keep the analysis consistent with Q study A, a factor was considered to be significant if it had a loading of 48 and more and if it had a minimum of 4 significant loadings. The un-rotated factor scores were analysed initially by eyeballing and it was noted that there were not enough loading on factors other than factor 1.

The factors were then rotated using varimax rotation and a 5 factor solution was first analysed, but it was unsuitable as there were not enough loadings on all the factors. The varimax rotation was done with 4 factors and it was found that not all factors had the 4 significant loadings that were required. The Factors 3 and 2 were manually rotated by 24°; factors 2 and 4 by 18° and factors 2 and 1 by 47° and this resulted in all factors with 4 or more significant loadings.

The 4 factor solution resulted in 17 participants loading in the 4 factors – factor 1 with 4 loadings, factor 2 with 5 loadings and factor 3 with 4 loadings and factor 4 with 4 loadings. The factor matrix and the factor characteristics are represented in Table 4.3-2 and Table 4.3-3 respectively.

**Table 4.3-2**

*Factor matrix with a X indicating a defining sort*

| | Loadings | | | |
|---|---|---|---|---|
| **QSORT** | **1** | **2** | **3** | **4** |
| 1 IN301 | 0.1627 | -0.2598 | 0.0353 | 0.6858X |
| 2 IN302 | 0.4401 | 0.393 | 0.0092 | 0.4055 |
| 3 IN303 | 0.6096X | 0.2771 | -0.0733 | 0.0795 |
| 4 IN304 | -0.2619 | 0.217 | 0.1801 | 0.5200X |
| 5 IN305 | 0.2917 | 0.4693 | 0.4086 | 0.4111 |
| 6 IN306 | 0.1644 | 0.4809X | 0.2348 | 0.3621 |
| 7 IN307 | 0.2585 | 0.388 | 0.3235 | 0.4157 |
| 8 IN308 | 0.301 | -0.2365 | 0.5385X | 0.0163 |
| 9 IN309 | 0.0156 | 0.3137 | 0.6823X | 0.3741 |
| 10 IN310 | 0.4916X | 0.3962 | 0.3056 | 0.4677 |
| 11 IN311 | -0.101 | 0.6293X | -0.4383 | 0.2982 |
| 12 IN312 | 0.3286 | 0.4919X | -0.0885 | -0.1189 |
| 13 IN313 | -0.25 | 0.1687 | 0.0046 | 0.4755X |
| 14 IN314 | 0.5210X | 0.4182 | 0.2821 | -0.0774 |
| 15 IN315 | -0.4226 | 0.5808X | 0.2317 | 0.1943 |
| 16 IN316 | 0.4152 | 0.6496X | 0.0459 | 0.0761 |
| 17 IN317 | 0.292 | 0.1125 | 0.5439X | 0.166 |
| 18 IN318 | 0.6169X | -0.2891 | -0.2439 | 0.1426 |
| 19 IN319 | 0.0256 | 0.3242 | 0.5809X | 0.0065 |
| 20 IN320 | 0.1738 | 0.1312 | -0.0369 | 0.7712X |
| 21 IN321 | 0.4467 | 0.1983 | 0.2282 | -0.0249 |
| % expl.Var. | 13 | 15 | 11 | 13 |

**Table 4.3-3**

*Factor characteristics*

| | Factors | | | |
|---|---|---|---|---|
| | **1** | **2** | **3** | **4** |
| No. of Defining Variables | 4 | 5 | 4 | 4 |
| Average Rel. Coef. | 0.8 | 0.8 | 0.8 | 0.8 |
| Composite Reliability | 0.941 | 0.952 | 0.941 | 0.941 |
| S.E. of Factor Z-Scores | 0.243 | 0.218 | 0.243 | 0.243 |

The factors were inter-correlated and the scores are represented in Table 4.3-4. The correlation scores were lower than 40, and a 4 factor solution was deemed suitable for the Q study B.

**Table 4.3-4**

*Correlations between factor scores*

| Factors | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1 | 1 | 0.384 | 0.3436 | 0.2586 |
| 2 | 0.384 | 1 | 0.3074 | 0.2797 |
| 3 | 0.3436 | 0.3074 | 1 | 0.2504 |
| 4 | 0.2586 | 0.2797 | 0.2504 | 1 |

After the factors were extracted, Q analysis was performed in PQ method and the factor scores (Z-scores) for each statement in the factors was calculated. The factor scores for the statements and the corresponding rank for that factor is represented in Table 4.3-5.

**Table 4.3-5**

*Factor scores with corresponding ranks*

| | Factors | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Statement** | **1** | **Rank** | **2** | **Rank** | **3** | **Rank** | **4** | **Rank** |
| 1. The client has to decide if they need green products | -0.88 | -2 | 0.84 | 2 | 1.27 | 3 | -1.66 | -4 |
| 2. It is cheaper to replace our product than repairing it, even if repairing is greener | -1 | -3 | -0.39 | 0 | -1.03 | -2 | 0.21 | 0 |
| 3. Safety features in a product is more important than green attributes | 1.48 | 3 | -0.07 | 0 | 2.14 | 4 | -0.57 | -1 |
| 4. Contractors show interest in green products | 1.14 | 3 | -1.48 | -4 | -0.07 | 0 | -1.02 | -2 |
| 5. Customers mainly look at price when purchasing a product | -0.08 | 0 | 1.69 | 4 | 0.65 | 1 | 1.1 | 3 |
| 6. Customers care about green behaviour and demand green products | -0.9 | -2 | -0.74 | -2 | 0.87 | 2 | -0.61 | -1 |
| 7. Customers use our products in non-green process | 0.42 | 1 | 0.46 | 1 | 0.88 | 2 | -1.14 | -3 |
| 8. There is an interest in green products among customers | 2.14 | 4 | 0.56 | 1 | -0.11 | 0 | -1.14 | -3 |
| 9. We have several green initiatives within our business | -0.22 | 0 | -0.84 | -2 | -1 | -2 | 1.09 | 3 |
| 10. I hardly think about green behaviour in my job | -1.1 | -3 | -0.63 | -1 | -0.6 | -1 | -1.3 | -3 |
| 11. Government needs to enforce and create demand for green products to enable businesses to manufacture green products | -0.23 | 0 | 1.58 | 3 | 0.85 | 2 | 0.11 | 0 |
| 12. Cost savings is the main reason for green initiatives like saving water and electricity | 1.09 | 2 | -1.14 | -3 | 0.55 | 1 | 0.93 | 2 |
| 13. Green initiatives are common in our industry | -0.82 | -1 | -0.44 | -1 | 0.12 | 0 | 0.57 | 1 |
| 14. Green products come to my mind when talking to my customers | -2.1 | -4 | -0.48 | -1 | 0.29 | 1 | -0.56 | -1 |
| 15. We need more focus on green marketing in our industry | -0.47 | -1 | 1.05 | 2 | -1.33 | -3 | 0.55 | 1 |
| 16. Green marketing is not relevant to our industry | -0.34 | 0 | 0.49 | 1 | -1.58 | -3 | -1.03 | -2 |
| 17. Customers accept green products only if they get better price and delivery over standard product | -0.56 | -1 | 0.42 | 1 | -0.66 | -1 | 1.47 | 3 |
| 18. We practise green initiatives only during the manufacturing stage | -1.26 | -3 | -0.14 | 0 | -0.74 | -2 | -0.48 | -1 |
| 19. We use green packaging for our products | -0.97 | -2 | -0.49 | -1 | 0.28 | 1 | 0.6 | 1 |
| 20. There are products in our business which are classified as green products | 1.08 | 2 | -0.45 | -1 | 0.12 | 0 | -0.55 | -1 |

**Table 4.3-5 Factor scores with corresponding ranks (continued)**

| | Factors | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Statement** | **1** | **Rank** | **2** | **Rank** | **3** | **Rank** | **4** | **Rank** |
| 21. I have had success promoting green products | 0.07 | 0 | -0.4 | 0 | 0.44 | 1 | 1.08 | 2 |
| 22. Most of our our products have green features in them | 0.17 | 0 | -1.46 | -3 | -0.37 | -1 | -0.19 | 0 |
| 23. There are a lot of green products in our industry | 1.01 | 2 | -0.86 | -2 | 0 | 0 | 0.1 | 0 |
| 24. I know the green attributes of our products | -0.88 | -2 | -1.17 | -3 | 1.2 | 2 | 1.7 | 4 |
| 25. I participate and support the green initiatives we have in our business | -0.85 | -2 | -0.78 | -2 | 1.54 | 4 | -0.2 | 0 |
| 26. Customers use our products in green processes like waste water treatment | 0.44 | 1 | 0.39 | 0 | 1.2 | 3 | 0.57 | 1 |
| 27. The products I sell are recyclable | 0.21 | 1 | -0.49 | -1 | -1.45 | -3 | 0.75 | 2 |
| 28. Meeting specifications is more important than providing a green product | 0.59 | 1 | 0.19 | 0 | -0.61 | -1 | 0.62 | 1 |
| 29. Servicing and repairing a product is greener then buying a new product | -0.43 | -1 | 0.79 | 2 | -0.24 | -1 | 0.3 | 0 |
| 30. I would need training if I have to promote green attributes of our products | 0.62 | 1 | 1.23 | 3 | 0.24 | 0 | 0.68 | 2 |
| 31. There will be demand for green products in the future | 0.93 | 2 | 1.63 | 3 | 0.78 | 1 | -0.92 | -2 |
| 32. I use green forms of transport to visit customers | -0.51 | -1 | 0.54 | 1 | -0.84 | -2 | -0.42 | -1 |
| 33. I use green attributes of our products to differentiate from competitors if our price is high | 0.13 | 0 | -0.39 | 0 | -0.05 | 0 | 0.01 | 0 |
| 34. I use internet and pdf catalogues instead of paper which is green | 1.16 | 3 | 1.35 | 3 | 0.25 | 0 | 2.09 | 4 |
| 35. Green products are expensive | 0.75 | 1 | 0.48 | 1 | -0.29 | -1 | 0.05 | 0 |
| 36. I don't care about green marketing | -1.98 | -4 | -2.51 | -4 | -1.27 | -3 | -1.43 | -3 |
| 37. It will be nice to see more green products in our industry | 1.04 | 2 | 1.66 | 4 | 1.35 | 3 | 0.54 | 1 |
| 38. I look for greener ways to market our products | 1.33 | 3 | 1.18 | 2 | 1.27 | 3 | 1.01 | 2 |
| 39. The amount of green products in the industry has decreased over time | -1.4 | -3 | -0.86 | -2 | -1.79 | -4 | -2.41 | -4 |
| 40. Customers don't like the term green | -0.46 | -1 | -1.28 | -3 | -1.17 | -2 | -0.88 | -2 |
| 41. Manufacturers need to innovate and produce more green products | 1.59 | 4 | 1.09 | 2 | 0.88 | 2 | 1.28 | 3 |
| 42. Products from competitors have more green features than our products | 0.04 | 0 | -0.16 | 0 | -1.98 | -4 | -0.93 | -2 |

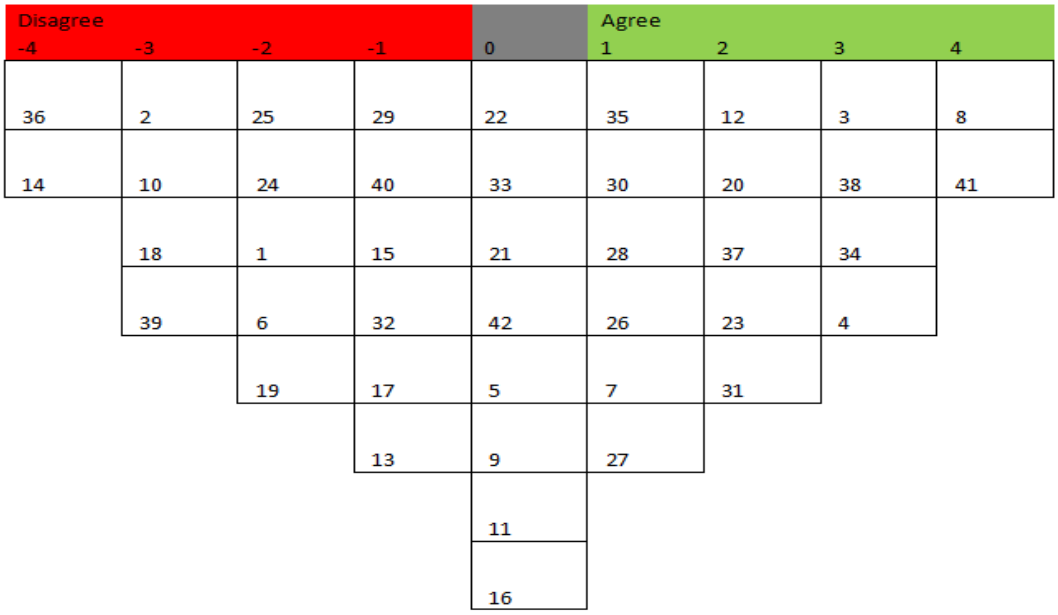
## 4.4 Q study B – results

The extracted factors were interpreted using the crib sheet method (Watts & Stenner, 2012). The crib sheet provided a systematic, holistic and consistent approach to factor interpretation and ensured each item in a factor was considered, instead of only considering factors with high or low ranks.

### 4.4.1 Factor 1B interpretation

Using the statement ranks for each factor from Table 4.3-5 on page number 99, the idealised Q sort was created for the factor 1 and is represented in Figure 4-4.

**Figure 4-4 Idealised Q sort for Q study B - factor 1**




The rank for each statement in factor 1 was compared against the rank in factors 2 and 3 and the crib sheet was generated. The crib sheet included the items ranked +4 in factor 1, items ranked higher in factor 1 compared to the ranks in other factors, items ranked lower in factor 1 compared to other factors and items ranked -4 in factor 1. When comparing the items with ranks higher and lower in factor 1, the item was included in the crib sheet even if the score was tied with other factors. The crib sheet for factor 1 is as follows:

**Items ranked +4 in factor 1:**

| | |
|---|---|
| 8. There is an interest in green products among customers | +4 |
| 41. Manufacturers need to innovate and produce more green products | +4 |

**Items ranked higher in factor 1 compared to other factors, with their corresponding score:**

| | |
|---|---|
| 4. Contractors show interest in green products | +3 |
| 12. Cost savings is the main reason for green initiatives like saving water and electricity | +2 |
| 20. There are products in our business which are classified as green products | +2 |
| 22. Most of our our products have green features in them | 0 |
| 23. There are a lot of green products in our industry | +2 |
| 28. Meeting specifications is more important than providing a green product | +1 |
| 33. I use green attributes of our products to differentiate from competitors if our price is high | 0 |
| 35. Green products are expensive | +1 |
| 38. I look for greener ways to market our products | +3 |
| 40. Customers don't like the term green | -1 |
| 42. Products from competitors have more green features than our products | 0 |

**Items ranked lower in factor 1 compared to other factors, with their corresponding score:**

| | |
|---|---|
| 2. It is cheaper to replace our product than repairing it, even if repairing is greener | -3 |
| 5. Customers mainly look at price when purchasing a product | 0 |
| 6. Customers care about green behaviour and demand green products | -2 |
| 10. I hardly think about green behaviour in my job | -3 |
| 11. Government needs to enforce and create demand for green products | 0 |
| 13. Green initiatives are common in our industry | -1 |
| 17. Customers accept green products only if they get better price and delivery over standard product | -1 |
| 18. We practise green initiatives only during the manufacturing stage | -3 |

| | |
|---|---|
| 19. We use green packaging for our products | -2 |
| 21. I have had success promoting green products | 0 |
| 25. I participate and support the green initiatives we have in our business | -2 |
| 29. Servicing and repairing a product is greener then buying a new product | -1 |

### Items ranked -4 in factor 1

| | |
|---|---|
| 14. Green products come to my mind when talking to my customers | -4 |
| 36. I don't care about green marketing | -4 |

### Other items of importance

| | |
|---|---|
| 16. Green marketing is not relevant to our industry | 0 |
| 24. I know the green attributes of our products | -2 |
| 27. The products I sell are recyclable | +1 |
| 30. I would need training if I have to promote green attributes of our products | +1 |
| 31. There will be demand for green products in the future | +2 |
| 34. I use internet and pdf catalogues instead of paper which is green | +3 |
| 37. It will be nice to see more green products in our industry | +2 |
| 39. The amount of green products in the industry has decreased over time | -3 |

### 4.4.2 Factor 1B results

**The highly interested**

Factor 1B represents 13% of the study variance and 4 participants significantly associate with this viewpoint.

**Table 4.4-1**

*Factor 1B participants*

| Participant ID | Gender | Experience | Title |
|---|---|---|---|
| IN303 | M | 10 years | Business Dev. Manager |
| IN310 | M | 2 years | Account Manager |
| IN314 | M | 4 years | Account Manager |
| IN318 | F | 1 year | Account Manager |

The marketers representing this factor show keen interest in green marketing (36: -4). As marketer IN303 affirms - “I do care about green marketing. It is important and will give us competitive advantage”.

They look for greener ways to market their products (38: +3), such as using electronic catalogues instead of printed ones (34: +3). These marketers feel that green initiatives such as servicing products instead of replacing them would be cheaper (2: -3) and initiatives such as reducing water and electricity use, saves cost (12: +2). The green marketing efforts of these marketers seem to pay off, as well as their customers also show lot of interest in green products (8: +4) (4: +3).

These marketers believe there are some green (20: +2), recyclable (27: +1) products within their business (20: +2) and in their industry (23: +2), which they use while promoting products to their customers (10: -3). They believe that the number of green products in their industry has increased over time (39: -3). Yet, they wish to see even more green products in their industry (37: +2) as they feel that there will be greater demand for green products in the future (31: +2). They feel that manufacturers should capitalise on this future demand by producing more green products (41: +4).

The overall views of these marketers are quite similar to those we saw in factor 2A. Hence, the marketers from this factor also fit under the same description of ‘highly interested’ toward green marketing.

### 4.4.3 Factor 2B interpretation

Using the statement ranks for each factor from Table 4.3-5 on page number 99, the idealised Q sort was created for the factor 1 and is represented in Figure 4-5.

**Figure 4-5 Idealised Q sort for Q study B - factor 2**

| Disagree | | | | | Agree | | | |
|---|---|---|---|---|---|---|---|---|
| -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 |
| 4 | 12 | 6 | 13 | 26 | 8 | 38 | 31 | 5 |
| 36 | 24 | 25 | 20 | 28 | 32 | 41 | 11 | 37 |
| | 40 | 9 | 14 | 3 | 16 | 15 | 34 | |
| | 22 | 39 | 27 | 18 | 35 | 1 | 30 | |
| | | 23 | 19 | 42 | 7 | 29 | | |
| | | | 10 | 33 | 17 | | | |
| | | | | 2 | | | | |
| | | | | 21 | | | | |

The rank for each statement in factor 2 was compared against the rank in factors 2 and 3 and the crib sheet was generated. The crib sheet included the items ranked +4 in factor 2, items ranked higher in factor 2 compared to the ranks in other factors, items ranked lower in factor 2 compared to other factors and items ranked -4 in factor 2. When comparing the items with ranks higher and lower in factor 2, the item was included in the crib sheet even if the score was tied with other factors. The crib sheet for factor 2 is as follows:

**Items ranked +4 in factor 2:**

| | |
|---|---|
| 5. Customers mainly look at price when purchasing a product | +4 |
| 37. It will be nice to see more green products in our industry | +4 |

**Items ranked higher in factor 2 compared to other factors, with their corresponding score:**

| | |
|---|---|
| 2. It is cheaper to replace our product than repairing it, even if repairing is greener | 0 |
| 10. I hardly think about green behaviour in my job | -1 |
| 11. Government needs to enforce and create demand for green products | +3 |
| 15. We need more focus on green marketing in our industry | +2 |
| 16. Green marketing is not relevant to our industry | +1 |
| 18. We practise green initiatives only during the manufacturing stage | 0 |
| 29. Servicing and repairing a product is greener then buying a new product | +2 |
| 30. I would need training if I have to promote green attributes of our products | +3 |
| 31. There will be demand for green products in the future | +3 |
| 32. I use green forms of transport to visit customers | +1 |
| 33. I use green attributes of our products to differentiate from competitors if our price is high | 0 |
| 35. Green products are expensive | +1 |
| 39. The amount of green products in the industry has decreased over time | -2 |
| 42. Products from competitors have more green features than our products | 0 |

**Items ranked lower in factor 2 compared to other factors, with their corresponding score:**

| | |
|---|---|
| 6. Customers care about green behaviour and demand green products | -2 |
| 9. We have several green initiatives within our business | -2 |
| 12. Cost savings is the main reason for green initiatives like saving water and electricity | -3 |

| | |
|---|---|
| 13. Green initiatives are common in our industry | -1 |
| 20. There are products in our business which are classified as green products | -1 |
| 21. I have had success promoting green products | 0 |
| 22. Most of our our products have green features in them | -3 |
| 23. There are a lot of green products in our industry | -2 |
| 24. I know the green attributes of our products | -3 |
| 25. I participate and support the green initiatives we have in our business | -2 |
| 26. Customers use our products in green processes like waste water treatment | 0 |
| 38. I look for greener ways to market our products | +2 |
| 40. Customers don't like the term green | -3 |
| 41. Manufacturers need to innovate and produce more green products | 2 |

### Items ranked -4 in factor 2

| | |
|---|---|
| 4. Contractors show interest in green products | -4 |
| 36. I don't care about green marketing | -4 |

### Other items of importance

| | |
|---|---|
| 1. The client has to decide if they need green products | +2 |
| 17. Customers accept green products only if they get better price and delivery over standard product | +1 |

### 4.4.4 Factor 2B results

**The highly interested with limitations**

Factor 2B represents 15% of the study variance and 5 participants significantly associate with this viewpoint.

**Table 4.4-2**

*Factor 2B participants*

| Participant ID | Gender | Experience | Title |
|---|---|---|---|
| IN306 | F | 32 years | Sales Manager |
| IN311 | M | 26 years | Sales Manager |
| IN312 | M | 5 years | Account Manager |
| IN315 | M | 2 years | Business Dev. Manager |
| IN316 | M | 10 years | Account Manager |

Similar to the marketers form factor 1B, the marketers representing this factor show strong interest in green marketing (36: -4) (10: -1). They use green forms of transport when visiting customers (32: +1) and look for greener ways to market their products (38: +2) such as using electronic catalogues over printed ones (34: +3). As marketer IN306 comments – “I try to walk / use public transportation wherever I can. I look forward to greater awareness about green products and marketing techniques in our industry”.

They also feel that there is a mild interest among customers on green products (8: +1). However, these marketers are not able to actively engage in green marketing (14:-1) (25: -1) (21: 0). This is because their customers mainly look for the price of the products over green attributes (5: +4) (17: +1). Marketer IN315 affirms this by saying that:

> Everyone should think about the nature and the environment. But, customers are cost conscious. People are worried about saving money and least bothered about the future. This attitude should change.

These marketers also feel that there is a lack of availability of green products within their business (22: -3) (20: -1) and in their industry in general (23: -2). They also lack the knowledge (24: -3) and prior training (30: +3) on the green attributes of their products that prevents them from effectively promoting such products.

Despite this current situation, the marketers believe that there will be more demand for green products in the future (31: +3) and there should be a greater focus on green products in their industry (15: +2) (37: +4). Marketer IN306 acknowledges this by mentioning that:

> Even though green marketing has not caught up in my industry, I am excited about the future prospects for Green products. I look forward to greater awareness about green products and marketing techniques in our industry and would willingly participate in workshops related to the same.

In summary, the marketers from this factor have a personal liking towards green marketing similar to the ‘highly interested’ marketers from factor 2A and 1B. Yet, due to the limitations with products, lack of knowledge and low customer interest, they are not able to fully engage in green marketing. Therefore, these marketers fit under the description of ‘highly interested with limitations’ in terms of their use of green marketing.

### 4.4.5 Factor 3B interpretation

Using the statement ranks for each factor from Table 4.3-5 on page number 99, the idealised Q sort was created for the factor 1 and is represented in Figure 4-6.

**Figure 4-6 Idealised Q sort for Q study B - factor 3**

| Disagree | | | | | Agree | | | |
|---|---|---|---|---|---|---|---|---|
| -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 |
| 39 | 36 | 18 | 29 | 34 | 31 | 24 | 37 | 3 |
| 42 | 15 | 32 | 35 | 30 | 5 | 7 | 38 | 25 |
| | 27 | 9 | 22 | 20 | 12 | 41 | 1 | |
| | 16 | 2 | 10 | 13 | 21 | 6 | 26 | |
| | | 40 | 28 | 23 | 14 | 11 | | |
| | | | 17 | 33 | 19 | | | |
| | | | | 4 | | | | |
| | | | | 8 | | | | |

The rank for each statement in factor 3 was compared against the rank in factors 2 and 3 and the crib sheet was generated. The crib sheet included the items ranked +4 in factor 3, items ranked higher in factor 3 compared to the ranks in other factors, items ranked lower in factor 3 compared to other factors and items ranked -4 in factor 3. When comparing the items with ranks higher and lower in factor 3, the item was included in the crib sheet even if the score was tied with other factors. The crib sheet for factor 3 is as follows:

**Items ranked +4 in factor 3:**

| | |
|---|---|
| 3. Safety features in a product is more important than green attributes | +4 |
| 25. I participate and support the green initiatives we have in our business | +4 |

**Items ranked higher in factor 3 compared to other factors, with their corresponding score:**

| | |
|---|---|
| 1. The client has to decide if they need green products | +3 |
| 6. Customers care about green behaviour and demand green products | +2 |
| 7. Customers use our products in non-green process | +2 |
| 10. I hardly think about green behaviour in my job | -1 |
| 14. Green products come to my mind when talking to my customers | +1 |
| 19. We use green packaging for our products | +1 |
| 26. Customers use our products in green processes like waste water treatment | +3 |
| 33. I use green attributes of our products to differentiate from competitors if our price is high | 0 |
| 36. I don't care about green marketing | -3 |
| 38. I look for greener ways to market our products | +3 |

**Items ranked lower in factor 3 compared to other factors, with their corresponding score:**

| | |
|---|---|
| 9. We have several green initiatives within our business | -2 |
| 15. We need more focus on green marketing in our industry | -3 |
| 16. Green marketing is not relevant to our industry | -3 |
| 17. Customers accept green products only if they get better price and delivery over standard product- | 1 |

| | |
|---|---|
| 27. The products I sell are recyclable | -3 |
| 28. Meeting specifications is more important than providing a green product | -1 |
| 29. Servicing and repairing a product is greener then buying a new product | -1 |
| 30. I would need training if I have to promote green attributes of our products | 0 |
| 32. I use green forms of transport to visit customers | -2 |
| 34. I use internet and pdf catalogues instead of paper which is green | 0 |
| 35. Green products are expensive | -1 |
| 41. Manufacturers need to innovate and produce more green products | +2 |

**Items ranked -4 in factor 3**

| | |
|---|---|
| 39. The amount of green products in the industry has decreased over time | -4 |
| 42. Products from competitors have more green features than our products | -4 |

**Other items of importance**

| | |
|---|---|
| 5. Customers mainly look at price when purchasing a product | +1 |
| 11. Government needs to enforce and create demand for green products | +2 |
| 21. I have had success promoting green products | +1 |
| 24. I know the green attributes of our products | +2 |
| 37. It will be nice to see more green products in our industry | +3 |
| 40. Customers don't like the term green | -2 |

### 4.4.6 Factor 3B results

**The mildly interested**

Factor 3B represents 11% of the study variance and 4 participants significantly associate with this viewpoint.

**Table 4.4-3**

*Factor 3B participants*

| Participant ID | Gender | Experience | Title |
|---|---|---|---|
| IN308 | M | 7 years | Account Manager |
| IN309 | M | 13 years | Sales Manager |
| IN317 | M | 11 years | Business Dev. Manager |
| IN319 | M | 3 years | Account Manager |

The marketers representing this factor show some interest in green marketing (10: -1) (36: -3). They support and participate in the green initiatives within their business (25: +4) and look for greener ways to market their products (38: +3). They also believe that green marketing is relevant to their industry (16: -3) as their customers like green products (40: -2) and use these products in green processes (3: +3) (6: +2). Due to this interest in green products from customers, they believe that the amount of green products in their industry has also increased over time (39: -4).

However, this interest in green marketing has not translated into practice for these marketers. They do not actively practice green marketing (14: +1) (10: -1). Instead of green attributes, they seem to focus on their product's safety features (3: +4) and price (5: +1) when dealing with customers. They do not use greener marketing materials such as electronic and internet catalogues (34: 0). These also indicate that there is enough focus on green marketing in the industry (15: -3) and do not show interest in receiving any training on green products (30: 0).

Since these marketers also pursue green marketing only occasionally, similar to those of factor 3A, they fit under the same description of ‘mildly interested’ in terms of their views on green marketing.

### 4.4.7 Factor 4B interpretation

Using the statement ranks for each factor from Table 4.3-5 on page number 99, the idealised Q sort was created for the factor 4 and is represented in Figure 4-7.

**Figure 4-7 Idealised Q sort for Q study B - factor 4**

| Disagree | | | | | Agree | | | |
|---|---|---|---|---|---|---|---|---|
| -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 |
| 1 | 7 | 40 | 32 | 29 | 28 | 21 | 17 | 34 |
| 39 | 8 | 31 | 18 | 2 | 19 | 38 | 41 | 24 |
| | 10 | 42 | 20 | 11 | 26 | 12 | 5 | |
| | 36 | 4 | 14 | 23 | 13 | 27 | 9 | |
| | | 16 | 3 | 35 | 15 | 30 | | |
| | | | 6 | 33 | 37 | | | |
| | | | | 22 | | | | |
| | | | | 25 | | | | |

The rank for each statement in factor 4 was compared against the rank in factors 2 and 3 and the crib sheet was generated. The crib sheet included the items ranked +4 in factor 4, items ranked higher in factor 4 compared to the ranks in other factors, items ranked lower in factor 4 compared to other factors and items ranked -4 in factor 4. When comparing the items with ranks higher and lower in factor 4, the item was included in the crib sheet even if the score was tied with other factors. The crib sheet for factor 4 is as follows:

**Items ranked +4 in factor 4:**

| | |
|---|---|
| 24. I know the green attributes of our products | +4 |
| 34. I use internet and pdf catalogues instead of paper which is green | +4 |

**Items ranked higher in factor 4 compared to other factors, with their corresponding score:**

| | |
|---|---|
| 2. It is cheaper to replace our product than repairing it, even if repairing is greener | 0 |
| 9. We have several green initiatives within our business | +3 |
| 12. Cost savings is the main reason for green initiatives like saving water and electricity | +2 |
| 13. Green initiatives are common in our industry | +1 |
| 17. Customers accept green products only if they get better price and delivery over standard product | +3 |
| 19. We use green packaging for our products | +1 |
| 21. I have had success promoting green products | +2 |
| 22. Most of our our products have green features in them | 0 |
| 27. The products I sell are recyclable | +2 |
| 28. Meeting specifications is more important than providing a green product | +1 |
| 33. I use green attributes of our products to differentiate from competitors if our price is high | 0 |
| 36. I don't care about green marketing | -3 |

**Items ranked lower in factor 4 compared to other factors, with their corresponding score:**

| | |
|---|---|
| 3. Safety features in a product is more important than green attributes | -1 |
| 7. Customers use our products in non-green process | -3 |

| | |
|---|---|
| 8. There is an interest in green products among customers | -3 |
| 10. I hardly think about green behaviour in my job | -3 |
| 11. Government needs to enforce and create demand for green products | 0 |
| 20. There are products in our business which are classified as green products | -1 |
| 31. There will be demand for green products in the future | -2 |
| 37. It will be nice to see more green products in our industry | +1 |
| 38. I look for greener ways to market our products | +2 |

**Items ranked -4 in factor 4**

| | |
|---|---|
| 1. The client has to decide if they need green products | -4 |
| 39. The amount of green products in the industry has decreased over time | -4 |

**Other items of importance**

| | |
|---|---|
| 4. Contractors show interest in green products | -2 |
| 5. Customers mainly look at price when purchasing a product | +3 |
| 16. Green marketing is not relevant to our industry | -2 |
| 41. Manufacturers need to innovate and produce more green products | +3 |
| 42. Products from competitors have more green features than our products | -2 |

### 4.4.8 Factor 4B results

**The altruistic**

Factor 4B represents 13% of the study variance and 4 participants significantly associate with this viewpoint.

**Table 4.4-4**

*Factor 4B participants*

| Participant ID | Gender | Experience | Title |
|---|---|---|---|
| IN301 | M | 25 years | Business Dev. Manager |
| IN304 | M | 24 years | Business Dev. Manager |
| IN313 | M | 8 years | Account Manager |
| IN320 | M | 25 years | Product Manager |

Similar to marketers from factors 1B and 2B, the marketers representing this factor show high interest in green marketing (36: -3). They have several green initiatives in their business (9: +3) and believe green marketing initiatives are common in their industry (13: +1). They often think about green marketing (10: -3) and look for greener ways to market their products (38: +2).

They actively use green marketing in their day to day job by using electronic catalogues instead of printed ones (34: +4), using recyclable products (27: +2) and environment friendly packaging (19: +1). They are also well aware of the green attributes in their products (24: +4).

However, as seen with marketers from factor 2B, the customers from marketers of this factor also do not have any interest in green products (6: -1) (8: -3) (4: -2). The customers accept green products only if they get better price (5: +3), better delivery over standard products (17: +3) and if it matches their technical specifications (28: +1). As a result, these marketers feel that there is not much demand for green products in their industry (31: -2).

Despite this lack of interest from customers, unlike the marketers from factor 2A, who see it as a limitation, the marketers from this factor still continue to pursue green marketing. As marketer IN301 explains:

> Because of the competitive marketplace, the price of the product plays an important role. Yet, if awareness amongst consumers is not created by the marketers, consumer interest will only lie in cheaper products

Similarly, marketer IN304 mentioned that “everyone should care about the planet and we (marketers) should educate all. Let us save the earth”.

The marketers believe they green marketing is quite relevant to their industry (16: -2) and that the customer do not solely decide if they want green products (1: -4) as marketers can influence this decision. They feel that the number of green products have increase over time (39:-4) and that manufacturers need to create more innovative green products (41: +3).

In summary, the marketers from this factor show an interest in green marketing and continue to promote green products, even if there is little demand from their customers for such products as it is the right thing to do. Therefore these marketers can be described as ‘altruistic’, in terms of their promotion of green marketing.

# Chapter 5 Discussion

## 5.1 The marketers from developed country

The analysis of data collected from the Australian marketers regarding their views on green marketing resulted in three factors:

Factor 1A Australia: The uninterested (UI-A)
Factor 2A Australia: The highly interested (HI-A)
Factor 3A Australia: The mildly interested (MI-A)

The factor headings - 'uninterested', 'highly interested' and 'mildly interested' are abbreviated as UI-A, HI-A and MI-A respectively where the '-A' signifies the Australian marketers.

It was established at the start of the thesis that marketers have a significant role to play in supporting sustainable development. There were two predominant views regarding the role of marketing and marketers in this regard. On the one hand marketing has largely been held responsible for the increase in consumption which is unsustainable (Peattie, 2001a; Peattie & Crane, 2005; Sanne, 2002; Schaefer & Crane, 2005). On the other hand though, it has also been ascertained that significant marketing is required to encourage sustainable consumption from both consumers and businesses, which puts more responsibility on marketers (Belz, 2008; Gordon et al., 2011; Hobson, 2002; Peattie & Peattie, 2009; Prothero et al., 2010; Prothero et al., 2011; Sharma et al., 2010).

The research did not find any particular evidence to support the first point of view that marketers promote unsustainable consumption. It should however be noted that the research wasn't conducted to explore this dimension in depth. However, regarding the second point of view that marketers have responsibility for promoting sustainable consumption, there are some significant findings through this research.

The three factors from the Australian marketers, UI-A, HI-A and MI-A, provide an understanding of the marketers' opinion towards green marketing, which varies from a high level of interest to low or no interest at all. Subsequently, it is evident that the willingness of these marketers to actively pursue green marketing in their work varies depending on their interest level. For instance, the UI-A marketers show no interest in green marketing and hence do not pursue it. The HI-A marketers show a high level of interest in green marketing and hence use it regularly, whereas the MI-A only use green marketing occasionally as they are only mildly interested in green marketing.

Therefore, while the HI-A marketers completely back the claims that marketing is responsible for promoting sustainable consumption and in raising awareness amongst customers (Belz, 2008; Fraj et al., 2013; Gordon et al., 2011), the MI-A marketers only support this view partially. At the same time, the UI-A marketers do not provide any support to these arguments about marketing being a solution to unsustainable consumption. These marketers do not do not take an effort to promote green consumer behaviour.

Scholars studying green marketing have questioned the attitudes of consumers (Chen, 2010; Cleveland, Kalamas, & Laroche, 2005; Grimmer & Bingham, 2013; K. Lee, 2008; Paladino & Pandit, 2012; Phau & Ong, 2007; Sammer & Wüstenhagen, 2006; Young et al., 2010), organisations (Dentchev, 2004; Kuk, Fokeer, & Hung, 2005; K. H. Lee & Ball, 2003; Menon & Menon, 1997; Saha & Darnton, 2005), managers (Choi & Parsa, 2007; Ditlev-Simonsen & Midttun, 2011; El Dief & Font, 2010; Fraj et al., 2013) and policy makers (Avallone, 2005; Dosi & Moretto, 2001; Joshi, 2004; Kammerer, 2009), but failed to focus on another important stakeholder group for green marketing – the marketers. This research from the Australian data proves that the role of marketers in supporting sustainable development cannot be taken for granted. When there are such varied attitudes between one set of marketers, who handle the same product range in the same

market, it raises serious questions on the ability of marketers as a whole in supporting and pursuing green marketing unconditionally.

## 5.2 The marketers from developing country

The analysis of data collected from the Indian marketers regarding their views on green marketing resulted in four factors:

Factor 1B India: The highly interested (HI-I)
Factor 2B India: The highly interested with limitations (HIWL-I)
Factor 3B India: The mildly interested (MI-I)
Factor 4B India: The altruistic (AL-I)

For the Indian marketers, the factor headings - 'highly interested', 'highly interested with limitations', 'mildly interested' and 'altruistic' are abbreviated as HI-I, HIWL-I, MI-I and AL-I respectively, where the '–I' signifies the Indian marketers.

The four distinct attitudes from the Indian marketers provide evidence that marketers' attitude towards green marketing differs between different marketers. While there had been numerous researches on green marketing in developing countries, most of such research has remained focussed on consumers (Jain & Kaur, 2006; Khare, 2014; Manaktola & Jauhari, 2007; Mayank & Amit, 2013), businesses (Jayaraman, Singh, & Anandnarayan, 2012; Nair & Menon, 2008; Narwal & Singh, 2013; Prakash-Mani, Thorpe, & Zollinger, 2002; R. P. Saxena & Khandelwal, 2012) and policy makers (Joshi, 2004; Li, Zhao, & Zhao, 2008; Mathiyazhagan & Haq, 2013; Peters & Thielmann, 2008). Much like what was observed with existing research in developed countries, there has been a failure to focus on marketers even in developing countries, despite the role of marketers as one of the key stakeholders for encouraging sustainable consumption.

When the attitudes of the Indian marketers are explored further, it was observed that the HI-I and MI-I marketers from India are largely similar to the HI-A and MI-A marketers from Australia. These Indian marketers also show a high or mild level of interest towards green marketing similar to those from Australia and use it in their work accordingly. Therefore, these Indian marketers, especially the HI-I ones, do support the arguments that green marketing can help promote sustainable consumption and raise customer awareness towards green options available to them (Belz, 2008; Gordon et al., 2011; Hobson, 2002; Peattie & Peattie, 2009; Prothero et al., 2010; Prothero et al., 2011; Sharma et al., 2010).

However, where the Indian factors mainly differ from that of the Australian ones is in the absence of a factor similar to UI-A. The UI-A marketers did not show any interest towards green marketing and hence did not pursue it in their work. The absence of such a factor from Indian marketers is noteworthy as there is an overall positive interest level amongst the Indian p-set in this research and no one dismisses green marketing as irrelevant. This finding is similar to that of Saxena and Khandelwal (2012) who found that there is a positive attitude towards green marketing in Indian industries. It should however be noted that the findings using Q methodology would mainly be relevant to the particular P-set used in this research. Q methodology is not particularly suited to generalise the findings across the wider population (Brown, 1980; Brown, 1993; Robinson, 2008; Vladica, 2012; Watts & Stenner, 2005). Therefore on a wider population of Indian marketers, there may or may not be a factor similar to UI-A.

Despite this limitation, the absence of a factor similar to UI-A in the Indian marketers is important, because although all Indian marketers are showing an interest in green marketing, not all of them actively pursue it in their work. This is where the factor HIWL-I is highly significant in this research. The HIWL-I was another factor where the Indian marketers viewpoints considerably differ that of the Australian ones. The factors from the Australian marketers presented a straightforward picture wherein the use of green

marketing at work varied linearly according to the interest level of the marketers. The HI-A and MI-A marketers showed interest in green marketing and hence pursued it, the UI-A showed no interest in green marketing and did not pursue it. In this respect, there wasn't any disconnect between the Australian marketers' interest and action towards green marketing.

However, while the same connection between interest and action towards green marketing is also true for the HI-I, MI-I and AL-I marketers from India, it is not valid for the HIWL-I marketers. These HIWL-I marketers, do not actively pursue green marketing, despite their high interest towards it. However, unlike a lack of interest which was a reason for the UI-A marketers in not pursuing green marketing, the HIWL-I marketers complain about many limitations, such as lack of availability of green products, higher price and lack of product knowledge, all of which inhibit their ability to pursue green marketing actively.

The lack of a factor similar to UI-A, and the emergence of the HIWL-I factors are not the only differences between the Indian and Australian marketers. The AL-I marketers are also unique to the Indian study and are absent from the Australian factors. These marketers, even though they are faced with similar limitations as the HIWL-I marketers, continue to pursue green marketing. The altruistic nature of the Al-I marketers, which goes beyond mere personal interest in green marketing as shown by the HI-A, HI-I and HIWL-I marketers, empowers the AL-I marketers to put the limitations behind them and continue to promote green products to their customers.

In summary, looking at both the Australian and the Indian data, there is a mixed interest towards green marketing and not all marketers use it actively in their work. Overall, it is apparent that there are two sets of variables that seem to influence whether a marketer pursues green marketing or not: external variables and internal variables. External variables are ones which are outside the marketer's sphere of influence, such as the products available to them from their employer and the importance of price for their

customers (HIWL-I marketers). At the same time, internal variables, are those that are within the control of marketers, such as knowledge (HIWL-I marketers) and altruistic nature (AL-I marketers).

## 5.3 External variables

### 5.3.1 Price

An external variable, which has an influence on the marketer's use of green marketing, is price. Price can play a part in limiting marketers interest towards green marketing as shown by the HIWL-I marketers. Table 5.3-1 shows how all the marketers scored certain statements related to price in the Q study.

**Table 5.3-1**

*Scores for price related statements*

| Statement No. | UI-A | HI-A | MI-A | HI-I | HIWL-I | MI-I | AL-I | Overall opinion |
|---|---|---|---|---|---|---|---|---|
| 5. Customers mainly look at price when purchasing a product | +3 | -1 | 0 | 0 | +4 | +1 | +3 | Positive |
| 35. Green products are expensive | +1 | -2 | +2 | +1 | +1 | -1 | 0 | Mixed |
| 17. Customers accept green products only if they get better price and delivery over standard product | +1 | -1 | 0 | -1 | +1 | -1 | +3 | Mixed |
| 33. I use green attributes of our products to differentiate from competitors if our price is high | -2 | +2 | +1 | 0 | 0 | 0 | 0 | Mixed |

It was evident through the scores for statement 5 that price is an important factor that affects customer purchase decisions. This opinion from marketers is consistent with that of extant research on B2B purchases reflecting a similar opinion on the importance of price (Anderson, Thomson, & Wynstra, 2000; Christopher & Gattorna, 2005; R. Lancioni, 2005; R. A. Lancioni, 2005; Morris & Joyce, 1988).

However, when we move from generic product purchases to more specific green product purchases, there was mixed opinion from the marketers. This is evident from statements 35 and 17 where there is some ambiguity between marketers on whether green products were considered expensive and whether customers are willing to pay more for green products. This ambiguity regarding the role of price on green marketing resonates with what can be found in the consumer green marketing literature. It has been reported that some customers indeed feel that green products are expensive and are not willing to pay higher prices for such products (Davari & Strutton, 2014; Grimmer & Bingham, 2013; Lu, Bock, & Joseph, 2013b; Manaktola & Jauhari, 2007; Nittala, 2014). At the same time there are also customers who are likely to pay a premium for green products (Banyte et al., 2010; D'Souza et al., 2006; Remaud et al., 2008; Sammer & Wüstenhagen, 2006). Therefore the mixed opinion from marketers for statements 35 and 17 seem to support both these arguments in the literature.

Despite such similarities with what we already know from the existing literature, the external variable of price has a distinct influence on these B2B marketers. When we consider the scores for statement 17, marketers who pursue green marketing actively, such as HI-A and HI-I do not see price as having a major influence on the customer's green purchase decision. At the same time, marketers who do not pursue green marketing, such as UI-A and HIWL-I feel that price does have an influence on customer's decision in purchasing a green product. In this regard, it is evident from this research that the marketer's interest level in green marketing is greatly enhanced

when customers override the focus on the product price when deciding to purchase green products.

In spite of price being a major factor for customers in green product purchases, marketers have the ability to use the green product attribute in their products as a tool to against competitors. This was explored using statement 33. Interestingly, the result was a stark difference between the opinion of the Australian and Indian marketers. The Australian marketers, HI-A and MI-A, did use green marketing whenever their prices were higher than competition. These marketers support arguments in the literature that green marketing benefits businesses with such competitive benefits (Baker & Sinkula, 2005; Craig & Douglas, 2001; D'Souza, Taghian, & Lamb, 2006; Mihalic, 2000; Ottman, Stafford, & Hartman, 2006; Sharma et al., 2010).

At the same time, this research also highlights the demographic differences between a developed and a developing country, because none of the Indian marketers used green marketing to gain competitive advantage. This is a contradiction to the arguments that green marketing would provide competitive benefits to businesses in developing countries (Jayaraman et al., 2012; Manaktola & Jauhari, 2007; Nair & Menon, 2008; R. P. Saxena & Khandelwal, 2012). It was evident from marketer IN105's following comments that the Indian marketers tried to use green products for competitive advantage, but do not use it anymore due to the failure of this strategy:

> We have promoted green products in the past, but at the end it did not give us any extra benefit or extra advantage. What customers are looking for more than anything else is value or the price. If there was a lower values, lower priced product available to the customer, he would prefer that solution. He would not pay one dollar extra for a green product. Customers are more focussed towards margins and prices than green product attributes.

Such a view seems to resonate with that of other Indian marketers, which is evident from their score for statement 33. This view from the Indian

marketers in not being able to use competitive benefits questions the conventional view in the literature. The competitive advantage that green marketing provides is one of the biggest incentives for businesses for adopting green marketing and manufacturing green products (Cramer, 2000; Kärnä, Hansen, & Juslin, 2003; Prakash-Mani et al., 2002; Sharma et al., 2010). If such an incentive is not utilised by marketers, then it can have serious implications for managers and businesses in effectively using green marketing as part of their strategy.

### 5.3.2 Product

The availability of green products is another external variable that can shape marketers' behaviour towards green marketing. The importance of having access to green products is highlighted when we look at how the marketers ranked some of the statements in Q sorts as shown in Table 5.3-2.

**Table 5.3-2**

*Scores for product related statements*

| Statement No. | UI-A | HI-A | MI-A | HI-I | HIWL-I | MI-I | AL-I | Overall opinion |
|---|---|---|---|---|---|---|---|---|
| 20. There are products in our business which are classified as green products | 0 | 1 | 3 | 2 | -1 | 0 | -1 | Mixed |
| 22. Most of our products have green features in them | 0 | -1 | -3 | 0 | -3 | -1 | 0 | Negative |
| 19. We use green packaging for our products | 0 | 0 | -1 | -2 | -1 | 1 | 1 | Mixed |
| 27. The products I sell are recyclable | 0 | 1 | 1 | 1 | -1 | -3 | 2 | Mixed |
| 23. There are a lot of | -3 | -1 | -3 | 2 | -2 | 0 | 0 | Negative |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| green products in our industry | | | | | | | | |
| 37. It will be nice to see more green products in our industry | 3 | 3 | 0 | 2 | 4 | 3 | 1 | Positive |
| 42. Products from competitors have more green features than our products | -1 | -2 | -1 | 0 | 0 | -4 | -2 | Negative |
| 41. Manufacturers need to innovate and produce more green products | 4 | 4 | -1 | 4 | 2 | 2 | 3 | Positive |

It is evident from statement 20 that most of the marketers had some products within their business which are specifically classified as green products, except for the HIWL-I and AL-I marketers. This lack of access to such green products was a limitation for HIWL-I marketers, but not for the AL-I marketers. At the same time, when the marketers were asked through statement 22 whether such green features were available in most of their products, the answer was a resounding no. Furthermore, when we look at the negative and low scores for statements 19, and 27, it is quite clear that not much effort has been taken to make the products greener or recyclable. Overall, it is apparent that green attributes in these marketers' products are not common.

It has already been established from consumer research that lack of access to green products affects the ability of consumers in exhibiting green behaviour by making a green purchase (De Pelsmacker, Driesen, & Rayp, 2005; Ginsberg & Bloom, 2004; Mayank & Amit, 2013; McDonald, Oates, Thyne, Alevizou, & McMorland, 2009; Vermeir & Verbeke, 2006; Vermeir & Verbeke, 2008; Young et al., 2010). In the same vein, the lack of availability of green products affects the ability of marketers as well from effectively pursuing green marketing. For instance, there was an overall negative

opinion to statement 23 regarding the abundance of green products in the industry. However, for marketers who do not pursue green marketing, such as the UI-A and HIWL-I, the scores for this statement was lower compared to all other marketers.

The scores for statements 37 and 42 suggest that the lack of green products is not just unique to the marketer's workplace alone, but it is the case across the industry. Marketer IN312 referred to this when he accepted that "green features are not available in our products, valves do not have any green features in them". This view is seconded by marketer AU218 who mentioned that "no valve manufacturer that I have heard of has ever mentioned green products in any way". It is clear from such statements that green attributes in valves is unheard of by many marketers both from both Australia and India.

The paradox of this lack of access to green products is that when customers do not have access to green products from a particular company, they can buy products from other brands or compromise on making a green choice to satisfy their immediate needs (Mayank & Amit, 2013; McDonald et al., 2009; Vermeir & Verbeke, 2006). However, when marketers do not have access to green products, it does not mean that they will compromise and give up on green marketing. This can be seen particularly from the AL-I marketers in this study. The AL-I marketers continue to pursue green marketing even when they do not have access to green products in their business (statement 20).

A possible risk to marketers pursuing green marketing when they do not have access to green products is greenwashing (TerraChoice, 2009). Greenwashing can be detrimental to the marketers and their employers because it creates confusion among customers and has a negative influence on building green trust for a brand ( Chen & Chang, 2013; Delmas & Burbano, 2011; Peattie, 1999; Saha & Darnton, 2005).

The research did not particularly explore if marketers were engaging in greenwashing, and it would be difficult to find this out directly from marketers

themselves. However, customers are already known to be sceptical about the claims of marketers (J. Chen & Zhang, 2013; Davari & Strutton, 2014; Mohr, Eroglu, & Ellen, 1998; Nittala, 2014; Paladino & Pandit, 2012; Pickett-Baker & Ozaki, 2008). Therefore, when marketers continue to pursue green marketing despite the lack of green product, such as the AL-I marketers, they may appear to be greenwashing from a customer's perspective.

While the results from the Q study highlights the lack of green products in the marketers industry, the reason behind this is clear. Marketer AU215 analyses this problem of lack of green features in the industry and provides the opinion that "not enough emphasis is being placed on designing, developing & producing green products". This view resonates with almost all the marketers in the study as shown by the high scores provided to statement 41.

In summary, there is evidence from both the Indian and Australian marketers that there is a lack of green focus when it comes to product development stage for these marketers' products. In comparison, the green product development literature says that a paradigm shift has been happening towards including environmental attributes in product development for quite a while (Dangelico & Pujari, 2010; Pujari, Wright, & Peattie, 2003; Yenipazarli, 2012). Such a view is certainly not visible from the opinions of marketers in this industry. The view that there is a lot of talk about green product development, but too little action towards making it happen, seems more suitable in this instance (Baumann, Boons, & Bragd, 2002).

## 5.4 Internal variables

### 5.4.1 Knowledge

Another variable that is closely related to marketers' behaviour toward green marketing is knowledge. While having access to the green products and the price that the customers are willing to pay for that product are external variables, having knowledge on green marketing and green products is an

internal variable that is influenced by the marketers themselves. Table 5.4-1 shows how the marketers scored certain statements related to knowledge in the Q study.

**Table 5.4-1**

*Scores for knowledge related statements*

| Statement No. | UI-A | HI-A | MI-A | HI-I | HIWL-I | MI-I | AL-I | Overall opinion |
|---|---|---|---|---|---|---|---|---|
| 24. I know the green attributes of our products | -1 | 2 | 3 | -2 | -3 | 2 | 4 | Mixed |
| 30. I would need training if I have to promote green attributes of our products | 2 | -3 | -2 | 1 | 3 | 0 | 2 | Mixed |

The marketers view for statement 24 was mixed. It is evident though that not all marketers know the green attributes in their products. Knowledge is a critical factor in encouraging green behaviour. Customers who have knowledge on green options available to them are found to be more receptive to purchasing green products, than those who lack such awareness (Mayank & Amit, 2013; Mostafa, 2009; Pagiaslis & Krontalis, 2014; Tanner & Kast, 2003). Similarly, this research suggests that marketers such as the HI-A, MI-A, MI-I and AL-I marketers, who have knowledge on green products are more likely to pursue green marketing as well.

However, when the degree of importance of marketers' knowledge on green products is compared to other variables such as price and product availability, it is apparent that knowledge is not as important as having access to green products. This is particularly visible from the HI-I marketers. These marketers do not know the green attributes of their products. Yet, they pursue green marketing because they have access to green products (statement 20).

Still, the relevance of knowledge as a variable that influences marketers' use of green marketing cannot be ignored, when most of the marketers concede that they need more training in order to promote green products effectively (statement 30). For instance, marketer AU212 mentioned that

> It has never been discussed with me, any green attributes of the products our companies manufacture. I may be just uneducated in the green systems my company has to offer, but on the same hand it is not been broadcasted or promoted.

Such a comment suggests that there is an expectation from the marketers that they must be trained by their businesses on the green attributes of their products.

When we look at this from a customer's point of view, it has been argued that there is a lack of environmental awareness among customer and that there is little hope for sustainability unless there is awareness among customers on green consumption (C. Chen, 2001; Hobson, 2002; Mohr et al., 1998; Peattie, 1999; Peattie, 2001b; Peattie & Crane, 2005; Seyfang, 2005). Customers are likely to do sustainable consumption when they know the environmental impacts of their purchases (D'Souza et al., 2006; Prakash, 2002; Vermeir & Verbeke, 2006; Vermeir & Verbeke, 2008; Vlosky et al., 1999). However, consumers do not have the necessary time or take the required effort to raise their knowledge on what green options are available to them (Young et al., 2010). This puts the responsibility back on marketers in raising the awareness levels of customers and encouraging them to make a green purchase (Gordon et al., 2011; Peattie & Charter, 2003; Prothero et al., 2010; Prothero et al., 2011; Sharma et al., 2010).

In essence, marketers are expected to assume the role of trainers and educate customers in making a green purchase. Yet, from the marketers' feedback in this study, it is apparent that there is not much training for these trainers themselves. It is known that customers are likely to move away from green choices when employees of businesses who sell green products do not know much about these products themselves (Paladino & Pandit, 2012).

Therefore, this need for training from marketers is quite alarming as their green marketing efforts may not pay off when they have a lack of knowledge.

Interestingly, the need for training is more evident from the Indian marketers, than those from Australia, highlighting the strong demographic differences for this variable. The opinion of Indian marketers regarding a strong need for training seems to support studies that have found low levels of environmental education in businesses in developing countries (Nair & Menon, 2008). Organisational training has a key role in supporting green marketing in developing countries (Zhu, Sarkis, Cordeiro, & Lai, 2008). Environmental education for employees in developing countries is particularly important, not only because the employees such as marketers can educate other stakeholders such as customers, but also because it safeguards the interest of businesses against political and other malefactors (Nair & Menon, 2008). Given such importance for training in developing countries, the lack of training for the Indian marketers is an important finding, especially when this doesn't appear as a big problem in a developed country like Australia.

### 5.4.2 Altruism

The existence of AL-I marketers is one of the most significant outcomes from this research. This factor was unique to the Indian marketers in the study and was not observed with the Australian marketers who participated in the study. Altruism is a psychographic variable that is part of the marketer's personal values, which can significantly influence their perception towards green marketing. The AL-I marketers have a lot of limitations, such as customers looking for low priced products (statement 17), not having many green products in their range (statement 20) and the need for more training from their businesses on green products (statement 30). However, without giving up in the face of such limitations, these marketers still pursue green marketing actively, which is different to other marketers in the study.

Altruism refers to “a concern for the welfare of others” (Straughan & Roberts, 1999, p. 574). Schwartz (1977) suggests that when a person becomes aware of the harmful consequences to others due to the state of the environment and when the individual takes responsibility for changing such harmful consequences to the environment, he displays an altruistic character. Schultz (2000, p. 392) expands this further and identifies social-altruistic values as those that “lead to concern for environmental issues when a person judges environmental issues on the basis of costs to or benefits for other people be they individuals, a neighbourhood, a social network, a country, or all humanity”.

Going by these definitions, if marketers were to exhibit such altruistic values, then they should take the responsibility for green marketing and use it actively to benefit customers or that of the larger society by providing green solutions, even if it does not provide personal benefits to the marketers themselves. The AL-I marketers exhibit such a character because they take responsibility and pursue green marketing to “educate others” and to “save the earth” (marketer – IN304) and not for commercial motives.

There is ample evidence in the literature that links altruism to green behaviour. For instance, Stern, Dietz and Kalof (1993) examined the role of social altruism – the concern for the welfare of others, and biospheric altruism - the concern for the non-human elements of the environment such as animals and other living beings, in shaping pro-environmental behaviour. They found that both social and biospheric altruism had a positive influence on green behaviour. Similarly, Straughen and Roberts (1999) found that altruism was one of the most important variables in predicting ecologically conscious consumer behaviour (ECCB) and suggested that it must not be ignored while profiling green customers. This influence of altruism on ECCB was reinforced by other studies as well (Akehurst, Afonso, & Martins Gonçalves, 2012; Cleveland et al., 2005).

In addition, De Groot and Steg (2008), undertook studies to examine whether egoistic, altruistic, and biospheric value orientation can lead to green behaviour. They found out that altruistic value strongly contributes to environmental beliefs and behavioural intentions, which was also similar to the findings of Schultz (2000). Many other studies explored the role of altruistic values in green behaviour and found altruism to be one of the most consistent variables in predicting a green behaviour (Griskevicius, Tybur, & Van den Bergh, 2010; Mostafa, 2009; Paladino & Pandit, 2012; Veiga & Ribeiro, 2012; Yeoh & Paladino, 2013).

Given such extensive evidence that altruism as being a main precursor to green behaviour, the finding from this research that the AL-I marketers pursue green marketing due to their altruistic nature is not surprising. However, the emergence of altruism as a factor in this study was quite unexpected. This is because the widespread research on the influence of altruism to environmental behaviour has only focussed on consumers (Akehurst et al., 2012; Cleveland et al., 2005; Mostafa, 2009; Paladino & Pandit, 2012; Yeoh & Paladino, 2013), and university students (De Groot & Steg, 2008; Griskevicius et al., 2010; Schultz, 2000; Stern et al., 1993; Straughan & Roberts, 1999; Veiga & Ribeiro, 2012). There has been no focus on the influence of a variable such as altruism on the green behaviour of other stakeholders such as businesses, marketers, shareholders, employees, policy marketers and others. The existence of AL-I marketers proves that psychographic variables affects green behaviour of other stakeholders as well, hence their perspective should not be ignored.

In addition, despite the extant research on altruism's influence on consumer environmental behaviour, there has not been any focus on the influence of such psychographic variables in the behaviour of consumers or other stakeholders in a developing country such as India. This was another reason why the AL-I marketers were unexpected at the start of the study, especially from the Indian marketers. The emergence of AL-I marketers highlights helps to fill such gaps in the literature, but there is potential for more significant

studies on the impact of altruism and other psychographic variables on stakeholders in developing countries.

# Chapter 6 Conclusion

In this chapter, the aim of the research and the research question is revisited and the findings are summarised against them. The implications from this research are also highlighted. The chapter concludes with the research limitations and recommendations for future research.

## 6.1 Research aims revisited

Marketers play an important role in green marketing as they need to promote sustainable consumption and raise green awareness amongst consumers (Belz, 2008; Gordon et al., 2011; Hobson, 2002; Kotler, 2011; Peattie & Charter, 2003; Peattie & Peattie, 2009; Prothero et al., 2010; Prothero et al., 2011; Sharma et al., 2010).

Despite this significant role of marketers in green marketing, research on the topic has had an acute focus on consumers with a lack of focus on marketers. It was also found that the green marketing literature has a lopsided focus on B2C markets and has received negligible attention in the B2B context. The lack of focus on B2B area and on marketers was an evident gap in the green marketing literature. This gap was wider when considering B2B research in developing countries. It was found that no green marketing research to date has focussed on developing countries in the B2B context. With this background, the research aimed at answering the following question - *What is the attitude of B2B marketers towards green marketing and does it vary between a developing and a developed country?*

The research as a whole therefore had two aims. The first was to focus on marketers in the B2B context and understand their attitudes towards green marketing. The second was to undertake the study in a developing as well as a developed country and compare the marketers' viewpoints between these countries. Q methodology (Brown, 1980) was used to gather and analyse data from a set of marketers working

in the valve industry from Australia and India in order to achieve these aims. The analysis of the Q sorts resulted in three factors form Australian marketers and four factors from the Indian marketers.

## 6.2 B2B marketers and green marketing

The emergence of the different Australian and Indian factors from this research confirms that the attitudes of marketers towards green marketing vary significantly. We have marketers who pursue green marketing actively, such as the HI-A, HI-I, AL-I marketers, marketers who do not pursue green marketing, such as the UI-A and HIWL-I marketers, and finally marketers who use green marketing infrequently, such as the MI-A and MI-I marketers. It can be concluded from this that marketers' interest level and the use of green marketing varies widely across both the Australian and the Indian study. This justifies the focus on marketers as this research proves the theory that the effectiveness of green marketing relies not only on customer's interest, but also that of the marketers.

When we look at the results of undertaking the research in a B2B context, few similarities and also differences are evident compared to what we already know from existing B2C literature. The mixed opinion on the importance of price for green products in this B2B industry replicates that of the wider opinion from B2C research. The focus on price on green product purchases seems to affect both consumer and business transactions equally. Yet, the finding that not all marketers use green marketing for competitive benefits contrasts that of B2C research. The lack of use of green marketing for competitive advantage also highlights the importance of focussing on marketers for effective use of green strategies.

Similarly, it was found that the lack of green products had an effect on the green marketing efforts of a majority of marketers. This was similar to what was already known from the B2C context, where consumers' green behaviour was inhibited by the lack of availability of green products (De Pelsmacker et al., 2005; Ginsberg &

Bloom, 2004; Mayank & Amit, 2013; McDonald et al., 2009; Vermeir & Verbeke, 2006; Vermeir & Verbeke, 2008; Young et al., 2010). Yet, the finding that a minor portion of marketers continue to pursue green marketing even when they do not have access to green products was a distinctive finding for this B2B research and emphasises the differences between marketers and consumers.

## 6.3 Developed vs developing country

The inclusion of marketers from Australia and India provided some significant results enabling the comparison of marketers' viewpoints from a developing and a developed country. There were some similarities evident between the Australian and Indian factors. The HI-A marketers from Australia had similar outlook as that of the HI-I marketers from India. Similarly, the MI-A and MI-I marketers also seemed to mirror each other in terms of their use of green marketing. Yet, there were also many noticeable differences between the two set of marketers which far outweigh these similarities.

The UI-A marketers were unique to the Australian study, while the HIWL-I and the AL-I marketers were unique to the Indian study. Such demographic would not have been evident had the research not been undertaken simultaneously with the two set of marketers.

The absence of the UI-A marketers in the Indian study, when combined with the other Indian factors implies that all the marketers from India had an overall positive outlook towards green marketing, than those from Australia. This highlights the demographic differences between the two regions leading us to believe that marketers in India would be more supportive of green marketing initiatives from their business.

At the same time, it was also evident that the Indian marketers wanted more training from their businesses on green marketing and on green products compared to the

Australian marketers. The Indian marketers also did not use green marketing for competitive benefits when compared to the Australian marketers. Such differences raise the question if the marketers from developed countries receive more exposure and training on green products from their businesses compared to their counterparts from developing countries. Given the overall interest level for green marketing in India, it also leads to speculation that training on green marketing would be more effective in India compared to that of Australia.

Finally, the AL-I factor was an unexpected, but again a significant outcome from the Indian study. The emergence altruism as a factor that can influence the behaviour of Indian marketers highlights the need for research on such psychographic variables in developing countries. Unfortunately, research on such psychographic variables have remained focussed on developed regions, when it is evident from our study that such a factor was absent from the Australian factors and only evident from the marketers in a developing country.

Overall, there were overwhelming differences between these two sets of marketers in this study. Therefore it is evident that a one size fits all approach towards describing the attitudes and needs of marketers between different regions, especially a developing and a developed country will not be possible. This research thus strengthens the need for studying the perspectives of stakeholders in developing countries separately in order for businesses to successfully implement green marketing strategies globally.

## 6.4 Implications for Practitioners

Managers must pay immediate attention to the lack of knowledge and the need for more training for marketers in this research. This is an essential requirement if green marketing strategies were to be fruitful for business. When marketers themselves do not know the green attributes of their products and want to learn how to use green marketing techniques, it is unfair to expect that they would be successful in

convincing customers to purchase green products. Managers should therefore consider a comprehensive training for marketers as part of the overall green marketing plan. Specifically, there should be more focus on such training programs in developing regions as this research highlighted more demand for such training from marketers in the developing country.

Such training is also crucial to help businesses compete in the market. It is already evident from this research the not all marketers, especially those form the developing country, use green marketing for competitive benefits. Given this background, providing training to marketers would also enhance the ability of businesses to give them an edge over the competitors through green marketing.

Apart from training, managers should also note the lack of green attributes in products which was reported by most of the marketers in this research. This is noteworthy, because most of the marketers wanted their business to manufacture more green products and expected that there will be a demand for such products in the market. Effort should therefore be taken to include green product dimensions in new product development and in revamping existing products to make them greener.

Finally, it is evident that the viewpoints and needs of marketers towards green marketing are different between a developed country and that of a developing country. Therefore, businesses, especially multi-national companies, should develop customised plans for every country when implementing green marketing strategies globally. A one size fits all approach is not likely to work due to strong demographic differences between marketers in difference regions.

## 6.5 Research Limitations

There were a few limitations from this research that were apparent while completing this thesis. When the P set for instance is considered, most of the participants were male marketers and only three female marketers were in the P set as a whole. This

low female ratio however was reflective of marketers in the valve industry. Male marketers were the majority in this industry and while some of the businesses that were part of this research did employ a small number of female marketers, others business only had male employees in marketing related roles. Majority of female employees in this industry were employed in non-marketing functions such as accounting and administration.

Also, upon completion of data collection, and while analysing the data, it was apparent that some of the statements in the Q set could have been worded better. For instance, statement 18 was written as “we practise green initiatives only during the manufacturing stage”. There was an overall negative score for this statement from all the marketers. In hindsight, it is difficult to assess if the negative score was for using green initiatives during manufacturing stage, or if it was for using such initiatives ‘only’ during the manufacturing stage. A better and simpler statement would have been “we use green initiatives during the manufacturing stage”

The use of online Q-sorts for this research is also a limitation as this resulted in limited interaction with participants. As a result, there was no opportunity to debrief participants, observe them during the Q-sorts or clarify the results with them. Finally, since the research uses Q methodology in bringing forth specific viewpoint of the marketers, it does not aim at generalising the results for a wider group of population. While the 41 participants used in this research are sufficient and valid for Q methodology (Brown, 1980; Brown, 1993; Robinson, 2008; Van Exel & de Graaf, 2005; Vladica, 2012; Watts & Stenner, 2005; Watts & Stenner, 2012; Webler et al., 2009), it would be unwise to suggest that the viewpoints expressed by these marketers would cover all the viewpoints of marketers working in the valve industry in India or Australia.

## 6.6 Directions for future research

One of the biggest gaps that were evident from this research was the lack of focus on psychographic variables such as altruism in developing countries such as India, compared to that of developed countries. Given that there have been numerous studies on the influence of psychographic variables on green behaviour since the early 70s, this omission in developing countries should not be ignored and poses a great opportunity for further research in this area, both in B2C and B2B contexts.

When the wider green marketing literature is considered, the limited research in the B2B area also presents good opportunity for further research in this area. Specifically, empirical research on green marketing in B2B area in developing countries is lacking and the space is wide open with numerous areas remaining unexplored in this context.

Through this research, there is proof that marketers, who are key stakeholders for sustainable development, have different attitudes towards green marketing. It would be valuable to explore the views of B2B marketers outside that of the valve industry considered in the study. It would also be worthwhile exploring attitudes of marketers in the B2C context as there has been limited attention to marketers within consumer marketing, despite an abundance of other research on customers and other stakeholders in the B2C context.

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# Appendices

## Appendix A.1 Definitions

Sustainability

Sustainability refers to “a moral way of acting, and ideally habitual, in which the person or group intends to avoid deleterious effects on the environmental, social, and economic domains, and which is consistent with a harmonious relationship with those domains that is conducive to a flourishing life” (Bañon Gomis, Guillén Parra, Hoffman, & Mcnulty, 2011, p. 176).

B2C

B2B stands for business to consumer and refers to “all kinds of businesses that sell products or provide services to end-user consumers” (Pfoertsch & Scheel, 2012, p. 265).

B2B

B2B stands for business to business and refers to “all kinds of businesses that sell products or provide services to other businesses” (Pfoertsch & Scheel, 2012, p. 265).

Valve Industry

The valve industry refers to businesses involved in manufacturing and / or distribution of industrial valves. A valve is a device that “controls the flow of fluid, by either preventing (when the valve is in the close position) or allowing (when the valve is in the open position) flow through it. Modern valves can control flow, rate, volume, pressure, and direction of fluid flow for liquids and gases” (Tsai, Chang, & Tseng, 2004, p. 249).

The industrial valves are used in a variety of businesses such as Oil & Gas, Chemical, Refinery, Mining, Pharmaceutical, Manufacturing, Power, Water and allied industries. The global industrial Valve market is forecast to be worth over US $93 billion in 2015 (Richardson, 2012).

RQDA

RDQA (Huang, 2012) is a R package for Qualitative Data Analysis which includes a number of standard Computer-Aided Qualitative Data Analysis (CADQAS) features and is available as an extra package for R statistical environment (R Core Team, 2013). The software allows to analyses interview transcripts by grouping statements under codes and categories and analysing the relationship between them.

Q methodology

Q methodology is “a qualitative but statistical approach that encompasses a distinctive set of psychometric and operational principles, which provides a foundation for the systematic and rigorous study of subjectivity, a person’s viewpoint, opinion, attitude, and the like” (Cools et al., 2009, p. 442).

Q method

Q method refers to the technique of data collection, statistical analysis and factor interpretation procedure (Van Exel & de Graaf, 2005, p. 6).

Concourse

A concourse is the “the flow of communicability surrounding any topic” (Brown, 1991, p. 3). It is a vast representation of all the expressions of human response and dialogue, verbal and nonverbal, on a given topic (Wilson, 2005).

Q set

The Q set, also referred as the Q sample, is a set of objects or statements or stimuli that are drawn from the concourse to represent a wide range of perspectives on the topic of investigation.

P set

The P set in Q method refers to the participants in the study who perform the Q sorts.

Q sort

The Q sort is the tool used to gather data from the participants. It is ‘the technical means whereby data are obtained for factoring’ (Brown, 1980, p. 17), where the participants are presented the statements in the Q set and are asked to rank order them in a distribution.

Flash Q

Flash Q is an online tool developed to conduct Q sorts using the internet. FlashQ helps to reduce the researcher's workload, and considers the needs of respondents at the same time by providing a user friendly interface (Hackert & Braehler, 2006b).

Factors

A factor in a Q study refers to a cluster of viewpoints or opinion on the topic.

Factor loadings

The number of factor loadings in a Q study refers to the number of participants who represent a given factor. Participants who obtain above a certain score for a particular factor would be considered to load significantly on that factor.

Q Factor analysis

The Q factor analysis is the quantitative part of Q methodology where statistical procedures are used to extract a set of factors or common view points from various individual Q sorts.

PQ Method

PQ method (Schmolck, 2013) is a software application that was developed specifically for Q methodology and helps in conducting Q factor analysis and interpretation.

Confounded loadings

When a participant is said to load significantly on more than one factor, that participant is considered to be confounded and is not considered to load on any factor during analysis.

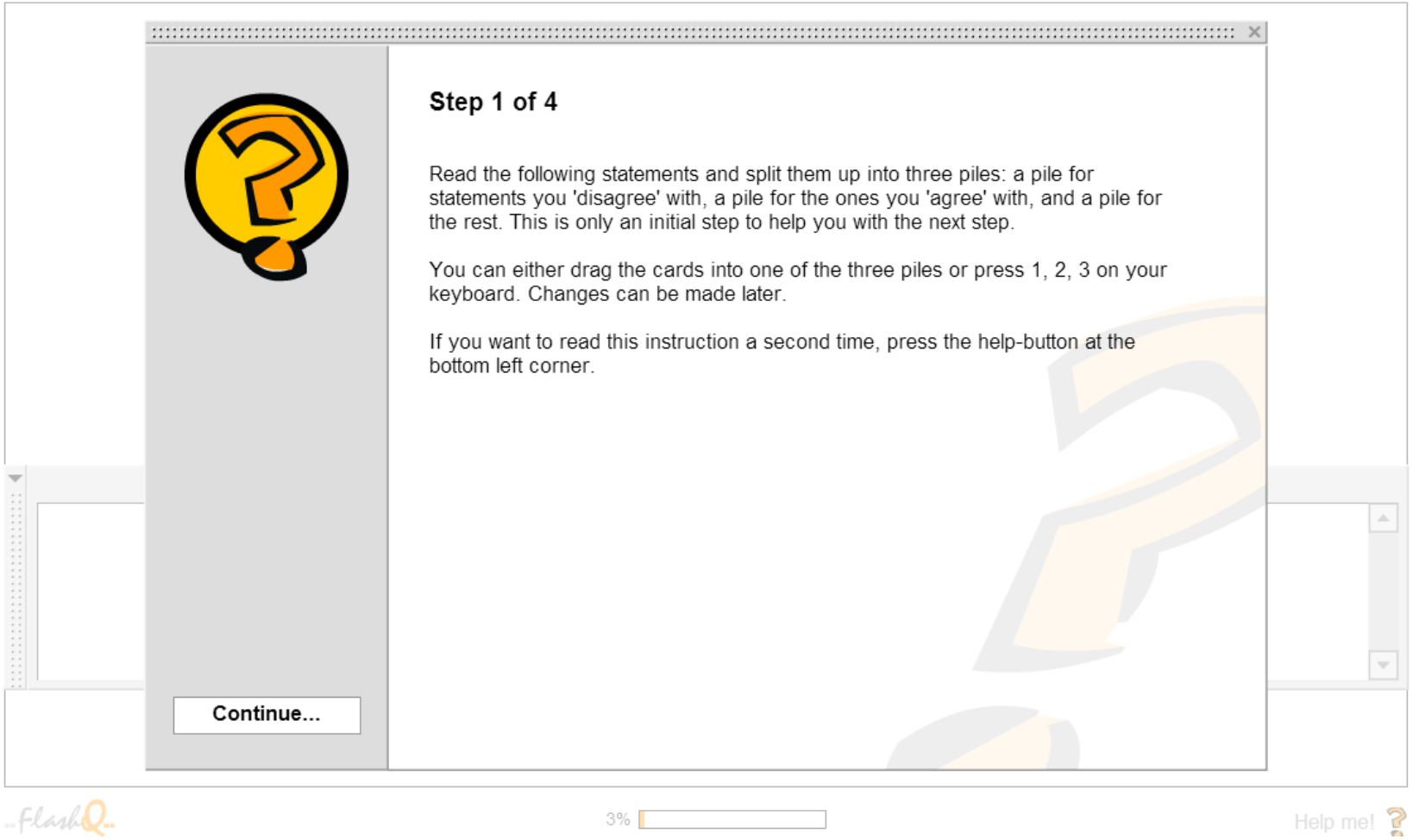
Z Scores

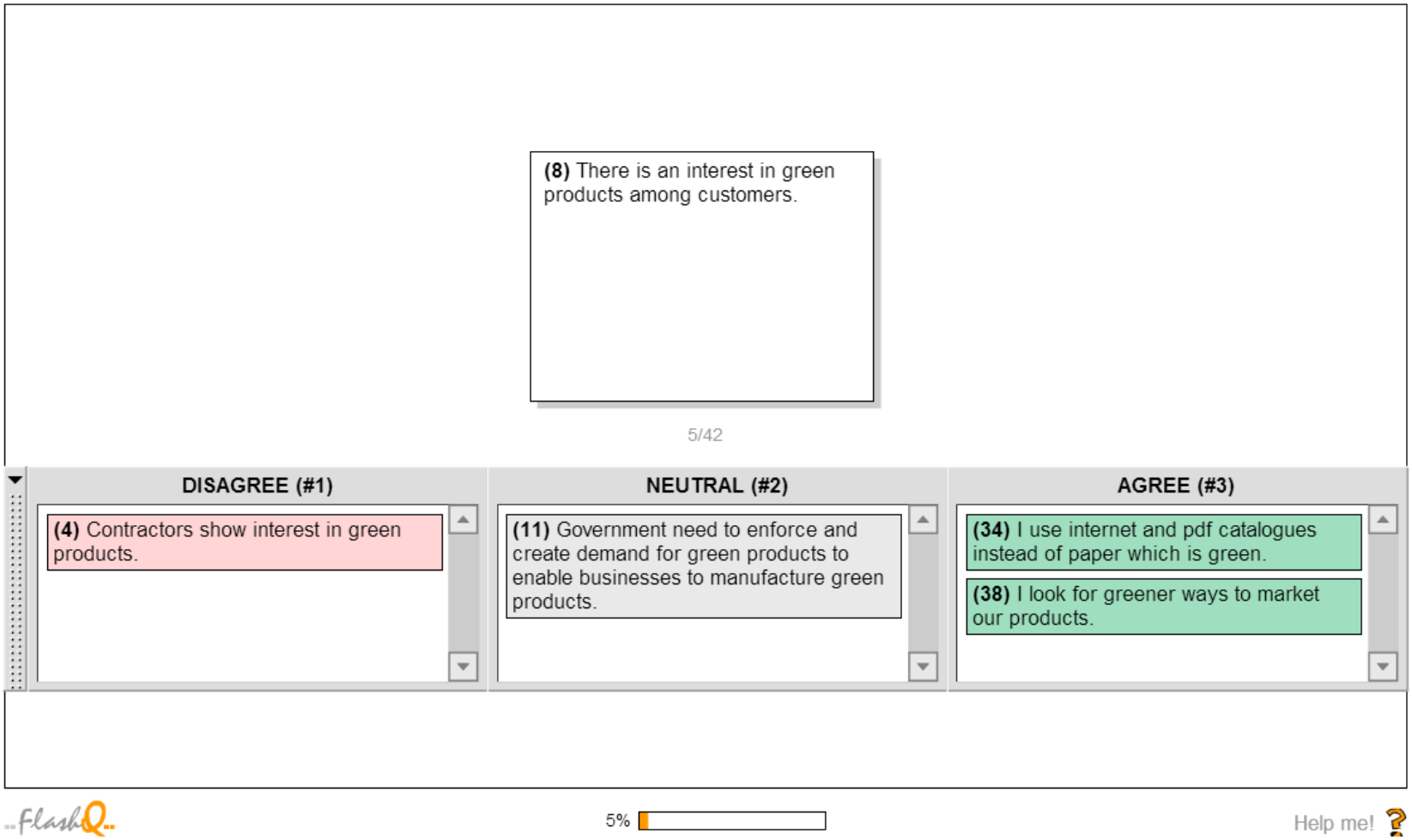
The Z scores are the weighted score calculated for each statement in a Q set during factor analysis. The Z score helps to rank order each statement in a factor and to generate an idealized Q sort for the factor.

Crib sheet

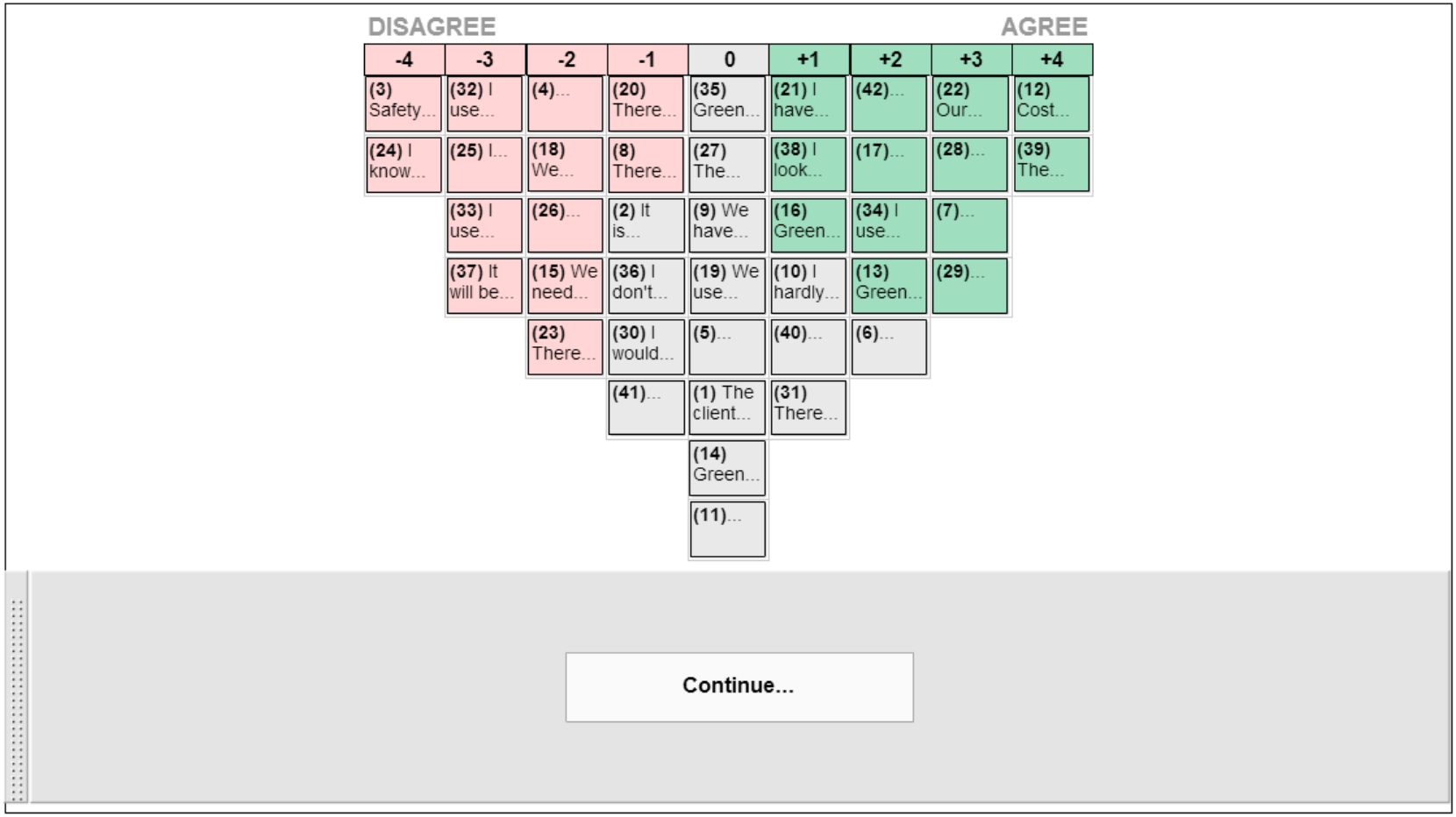
A crib sheet (Watts & Stenner, 2012) is the tool used for factor interpretation and provides a systematic, holistic and consistent approach to factor interpretation.

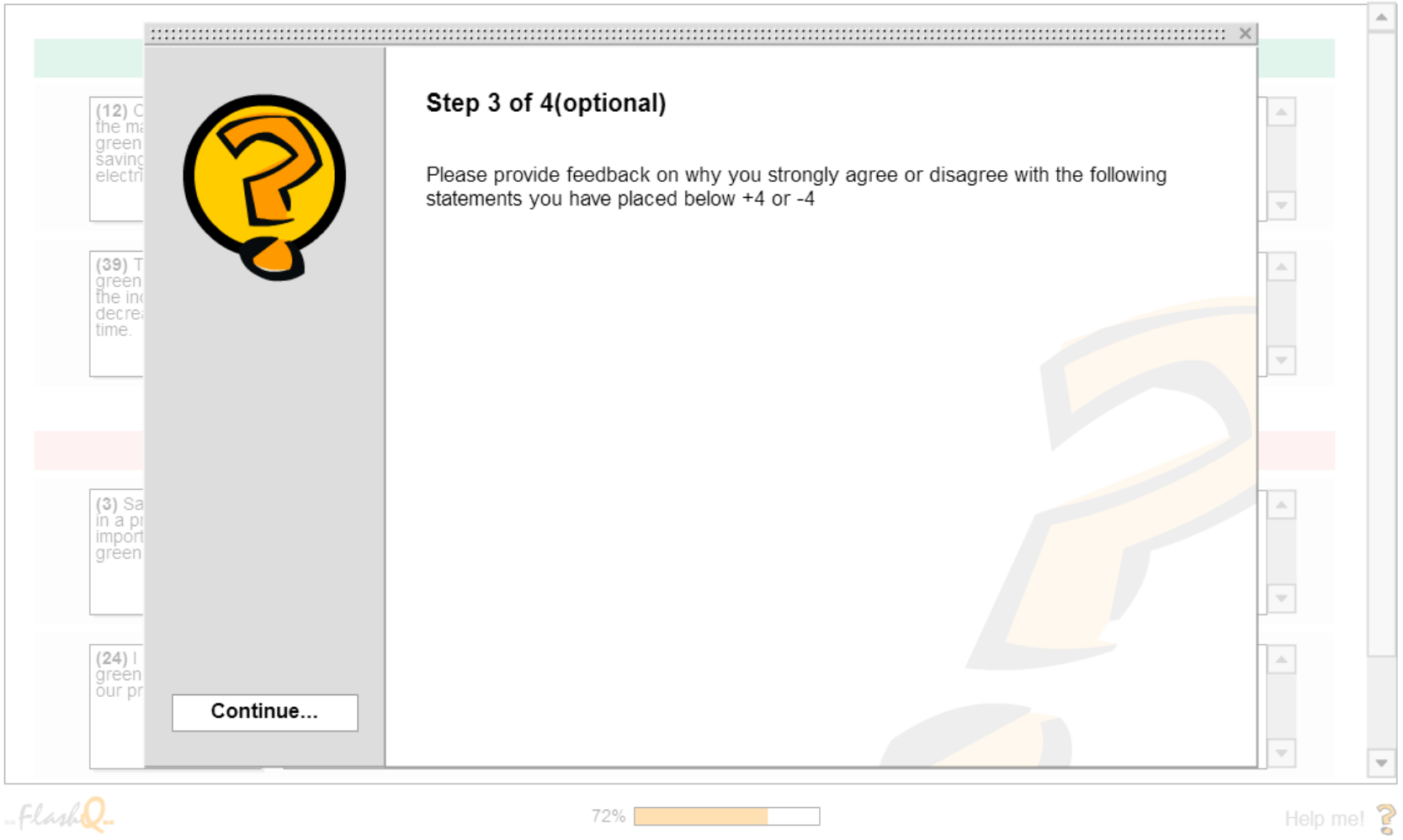
## Appendix A.2 Flash Q online Q sort – Screenshot

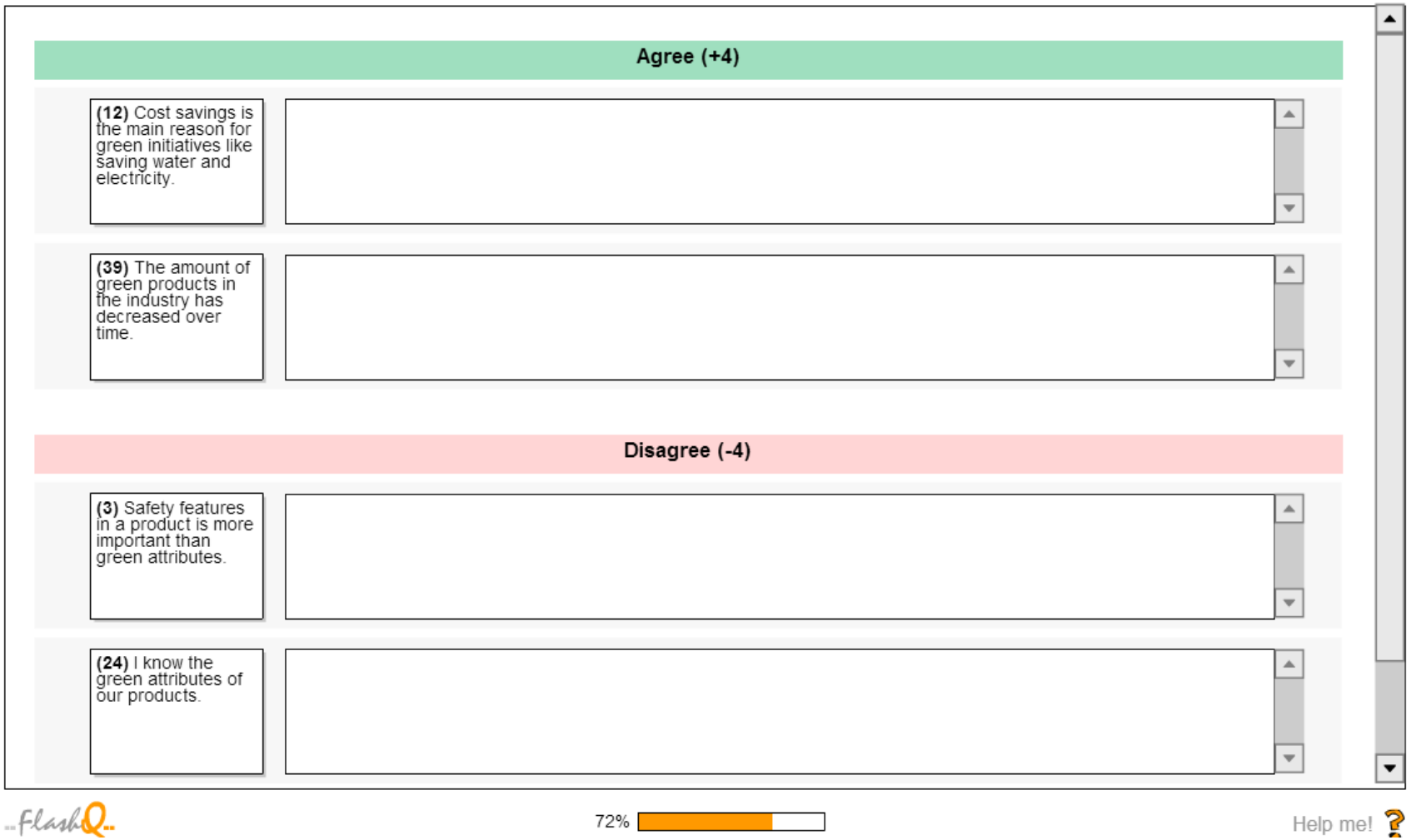


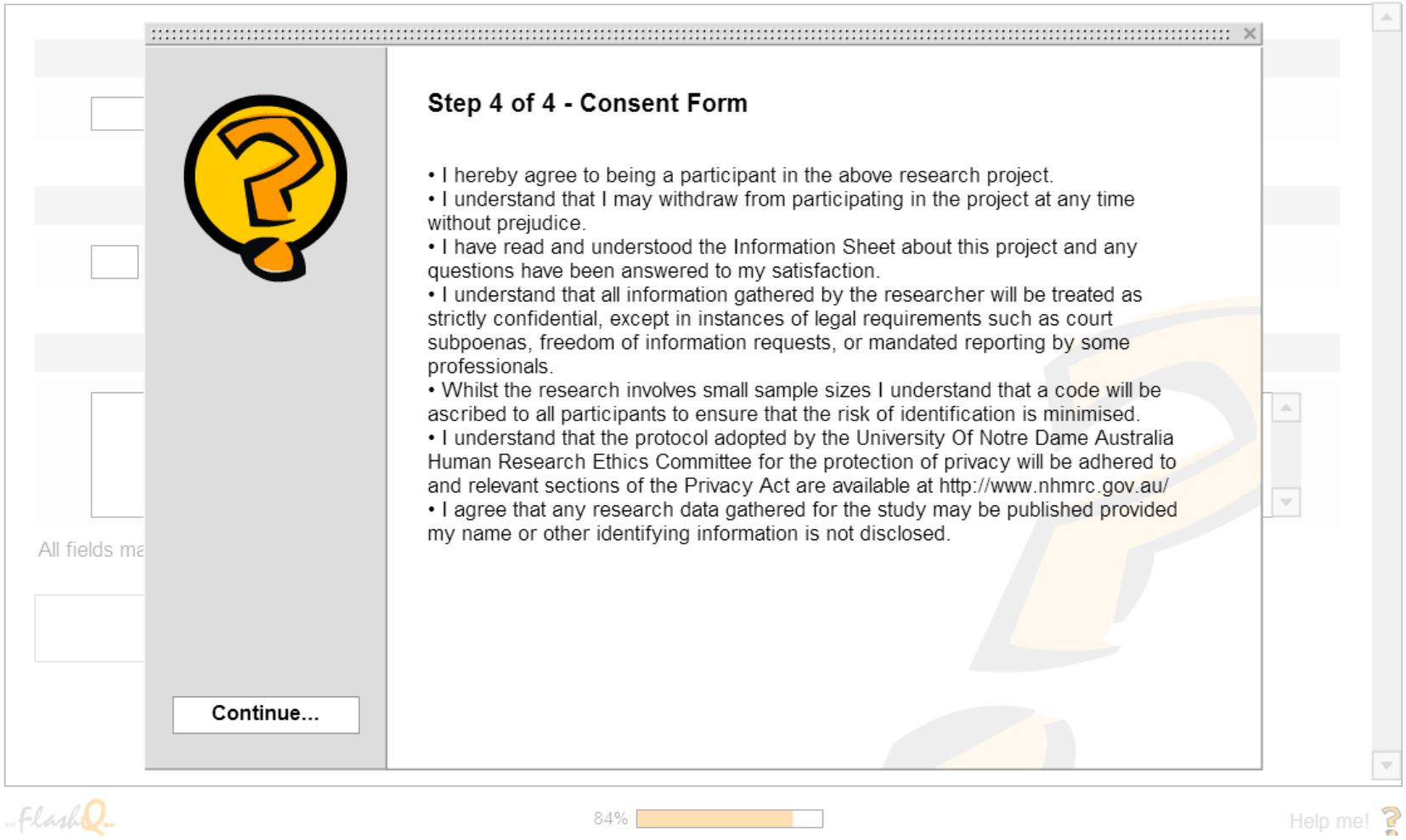

(8) There is an interest in green products among customers.
5/42
DISAGREE (#1)
(4) Contractors show interest in green products.
NEUTRAL (#2)
(11) Government need to enforce and create demand for green products to enable businesses to manufacture green products.
AGREE (#3)
(34) I use internet and pdf catalogues instead of paper which is green.
(38) I look for greener ways to market our products.
FlashQ
5%
Help me!

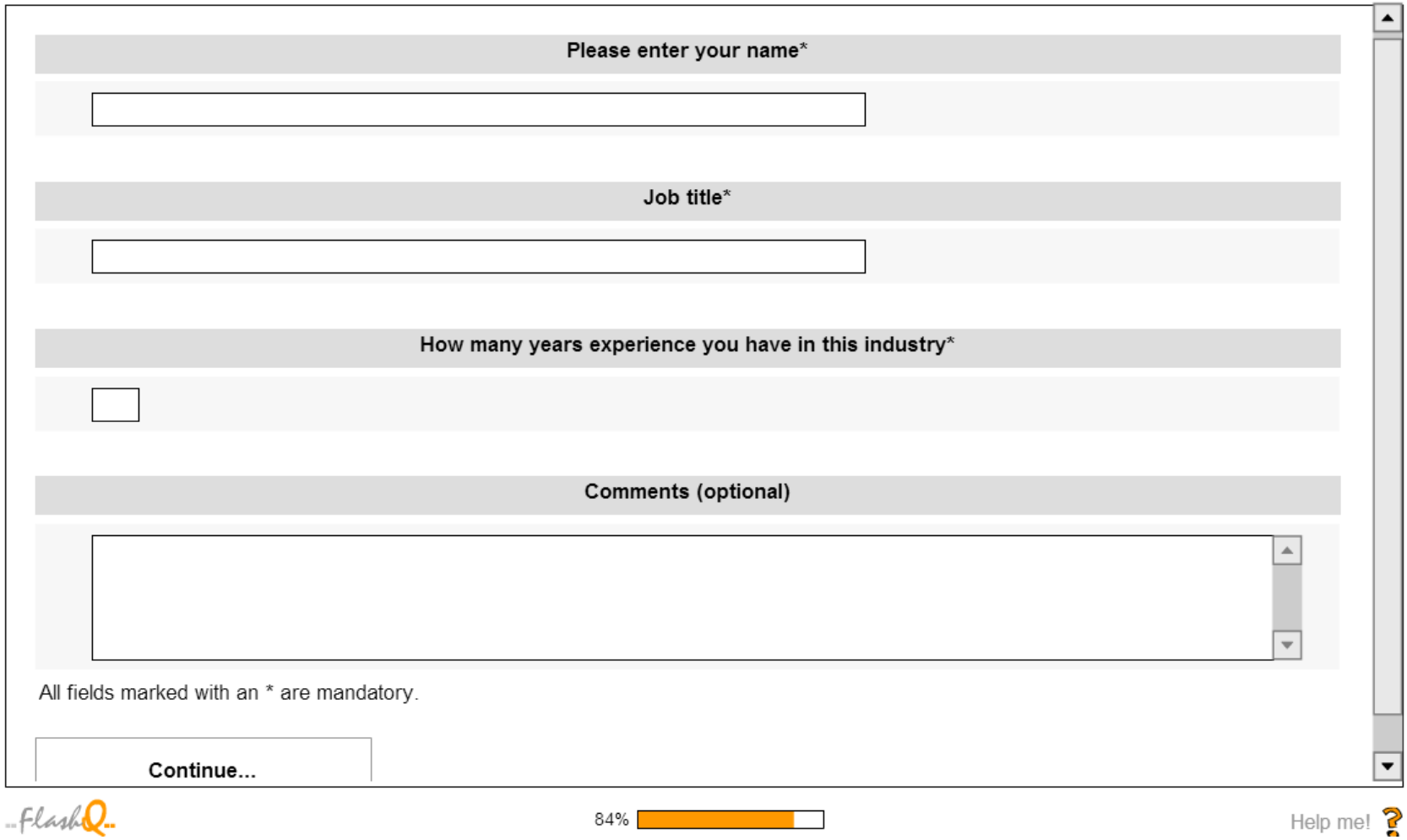

Step 2 of 4
Now take the cards from the 3 piles and rank them between -4 to +4 in the grid above. Rank -4 is for the ones your strongly disagree with and +4 for ones you strongly agree with and +1/-1 for the ones you somewhat agree or disagree with. Neutral items can be placed under 0.
If you have more cards in one of the piles, please rearrange them in a different pile.
There should be no blank spaces in the grid.
You can rearrange the cards if you want to change the order.
Continue...
(3) Safety important
(24) I kno products.
(32) I use
ng
have oducts.
atures in
FlashQ
22%
Help me!

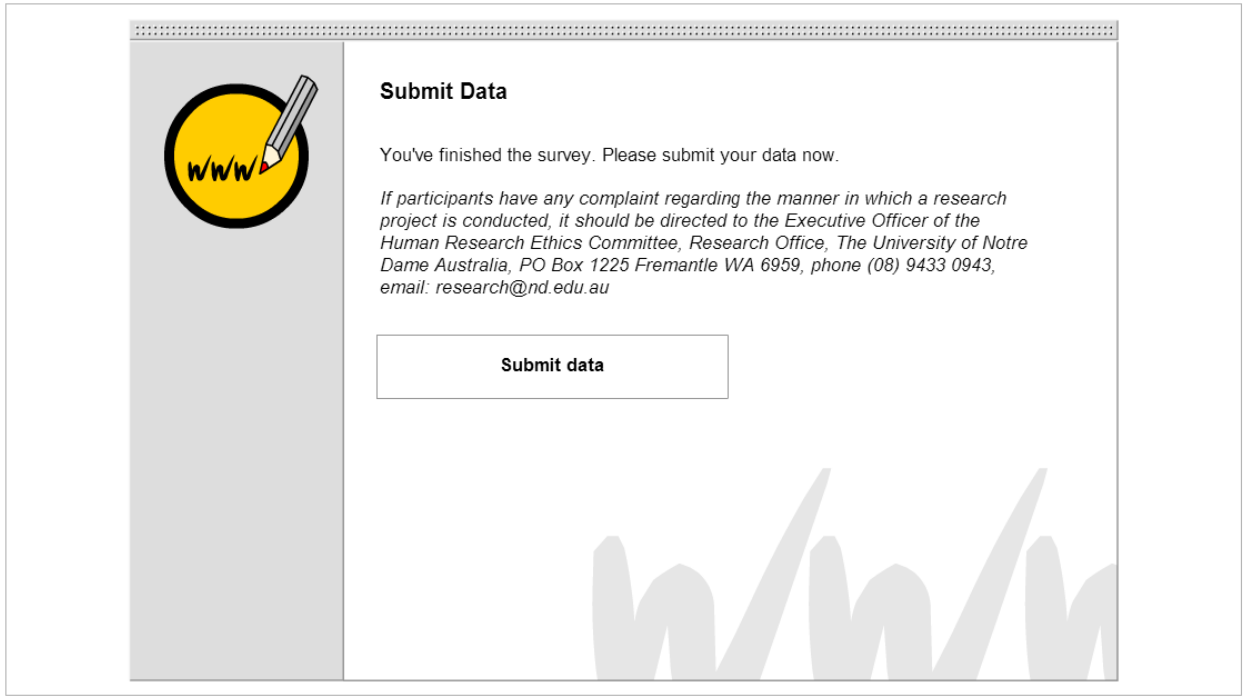

DISAGREE
AGREE
-4
-3
-2
-1
0
+1
+2
+3
+4
(3) Safety...
(32) I use...
(4)...
(20) There...
(35) Green...
(21) I have...
(42)...
(22) Our...
(12) Cost...
(24) I know...
(25) I...
(18) We...
(8) There...
(27) The...
(38) I look...
(17)...
(28)...
(39) The...
(33) I use...
(26)...
(2) It is...
(9) We have...
(16) Green...
(34) I use...
(7)...
(37) It will be...
(15) We need...
(36) I don't...
(19) We use...
(10) I hardly...
(13) Green...
(29)...
(23) There...
(30) I would...
(5)...
(40)...
(6)...
(41)...
(1) The client...
(31) There...
(14) Green...
(11)...
Continue...
FlashQ
22%
Help me!


(12) C
the ma
green
saving
electri
(39) T
green
the in
decre
time.
(3) Sa
in a pr
import
green
(24) I
green
our pr
Step 3 of 4(optional)
Please provide feedback on why you strongly agree or disagree with the following statements you have placed below +4 or -4
Continue...
FlashQ
72%
Help me!


Agree (+4)
(12) Cost savings is the main reason for green initiatives like saving water and electricity.
(39) The amount of green products in the industry has decreased over time.
Disagree (-4)
(3) Safety features in a product is more important than green attributes.
(24) I know the green attributes of our products.
FlashQ
72%
Help me!


Step 4 of 4 - Consent Form
• I hereby agree to being a participant in the above research project.
• I understand that I may withdraw from participating in the project at any time without prejudice.
• I have read and understood the Information Sheet about this project and any questions have been answered to my satisfaction.
• I understand that all information gathered by the researcher will be treated as strictly confidential, except in instances of legal requirements such as court subpoenas, freedom of information requests, or mandated reporting by some professionals.
• Whilst the research involves small sample sizes I understand that a code will be ascribed to all participants to ensure that the risk of identification is minimised.
• I understand that the protocol adopted by the University Of Notre Dame Australia Human Research Ethics Committee for the protection of privacy will be adhered to and relevant sections of the Privacy Act are available at http://www.nhmrc.gov.au/
• I agree that any research data gathered for the study may be published provided my name or other identifying information is not disclosed.
Continue...
All fields ma
84%
Help me!


Please enter your name*
Job title*
How many years experience you have in this industry*
Comments (optional)
All fields marked with an * are mandatory.
Continue...
84%
Help me!


Submit Data
You've finished the survey. Please submit your data now.
If participants have any complaint regarding the manner in which a research project is conducted, it should be directed to the Executive Officer of the Human Research Ethics Committee, Research Office, The University of Notre Dame Australia, PO Box 1225 Fremantle WA 6959, phone (08) 9433 0943, email: research@nd.edu.au
Submit data
FlashQ
97%

## Appendix A.2 PQ Method – Correlation matrix and factor score calculations – Q study A

**Table A.2-1**

*Correlation matrix between sorts*

| SORTS | AU201 | AU202 | AU203 | AU204 | AU205 | AU206 | AU207 | AU208 | AU209 | AU210 | AU211 | AU212 | AU213 | AU214 | AU215 | AU216 | AU217 | AU218 | AU219 | AU220 | AU221 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 100 | 31 | 5 | 23 | 23 | -7 | 15 | 21 | 23 | 16 | 23 | 1 | 15 | -13 | 4 | 30 | 38 | 23 | 20 | 29 | 15 |
| 2 | 31 | 100 | 41 | 56 | 41 | 25 | 49 | 28 | 43 | 13 | 5 | 56 | 0 | 46 | 15 | 27 | 51 | 51 | 59 | 35 | 19 |
| 3 | 5 | 41 | 100 | 54 | 27 | 39 | 47 | 30 | 39 | 9 | -4 | 22 | -5 | 47 | 16 | 17 | 48 | 45 | 41 | 32 | 32 |
| 4 | 23 | 56 | 54 | 100 | 16 | 41 | 57 | 32 | 33 | -3 | -10 | 56 | 3 | 39 | 9 | 38 | 43 | 43 | 36 | 31 | 18 |
| 5 | 23 | 41 | 27 | 16 | 100 | 28 | 24 | 16 | 29 | 17 | 55 | 31 | 31 | 20 | 42 | 23 | 33 | 38 | 46 | 45 | 56 |
| 6 | -7 | 25 | 39 | 41 | 28 | 100 | 31 | 18 | 45 | 1 | -3 | 24 | 12 | 36 | 33 | 37 | 30 | 48 | 39 | 52 | 23 |
| 7 | 15 | 49 | 47 | 57 | 24 | 31 | 100 | 19 | 31 | 30 | -7 | 63 | -10 | 39 | -7 | 27 | 34 | 62 | 35 | 42 | 16 |
| 8 | 21 | 28 | 30 | 32 | 16 | 18 | 19 | 100 | 29 | 19 | 2 | 20 | 18 | -10 | 47 | 14 | 42 | 40 | 32 | 10 | 41 |
| 9 | 23 | 43 | 39 | 33 | 29 | 45 | 31 | 29 | 100 | 10 | -4 | 29 | 12 | 28 | 31 | 37 | 53 | 40 | 46 | 32 | 28 |
| 10 | 16 | 13 | 9 | -3 | 17 | 1 | 30 | 19 | 10 | 100 | 16 | 17 | 24 | -17 | 11 | 42 | 16 | 38 | 16 | 23 | 1 |
| 11 | 23 | 5 | -4 | -10 | 55 | -3 | -7 | 2 | -4 | 16 | 100 | -10 | 42 | -10 | 35 | 31 | 30 | 21 | 28 | 31 | 37 |
| 12 | 1 | 56 | 22 | 56 | 31 | 24 | 63 | 20 | 29 | 17 | -10 | 100 | 6 | 37 | 7 | 32 | 20 | 46 | 49 | 24 | 13 |
| 13 | 15 | 0 | -5 | 3 | 31 | 12 | -10 | 18 | 12 | 24 | 42 | 6 | 100 | -24 | 60 | 27 | 23 | 18 | 18 | 29 | 35 |
| 14 | -13 | 46 | 47 | 39 | 20 | 36 | 39 | -10 | 28 | -17 | -10 | 37 | -24 | 100 | -7 | 8 | 17 | 32 | 23 | 28 | 11 |
| 15 | 4 | 15 | 16 | 9 | 42 | 33 | -7 | 47 | 31 | 11 | 35 | 7 | 60 | -7 | 100 | 12 | 55 | 27 | 38 | 30 | 56 |
| 16 | 30 | 27 | 17 | 38 | 23 | 37 | 27 | 14 | 37 | 42 | 31 | 32 | 27 | 8 | 12 | 100 | 37 | 39 | 36 | 47 | 0 |
| 17 | 38 | 51 | 48 | 43 | 33 | 30 | 34 | 42 | 53 | 16 | 30 | 20 | 23 | 17 | 55 | 37 | 100 | 47 | 65 | 47 | 39 |
| 18 | 23 | 51 | 45 | 43 | 38 | 48 | 62 | 40 | 40 | 38 | 21 | 46 | 18 | 32 | 27 | 39 | 47 | 100 | 53 | 47 | 24 |
| 19 | 20 | 59 | 41 | 36 | 46 | 39 | 35 | 32 | 46 | 16 | 28 | 49 | 18 | 23 | 38 | 36 | 65 | 53 | 100 | 43 | 24 |
| 20 | 29 | 35 | 32 | 31 | 45 | 52 | 42 | 10 | 32 | 23 | 31 | 24 | 29 | 28 | 30 | 47 | 47 | 47 | 43 | 100 | 44 |
| 21 | 15 | 19 | 32 | 18 | 56 | 23 | 16 | 41 | 28 | 1 | 37 | 13 | 35 | 11 | 56 | 0 | 39 | 24 | 24 | 44 | 100 |

**Table A.2-2**

*Un-rotated factor matrix*

| | Factors | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sorts** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** |
| 1 AU201 | 0.343 | 0.215 | 0.397 | 0.242 | 0.544 | 0.351 | 0.126 | 0.237 |
| 2 AU202 | 0.705 | -0.29 | 0.053 | 0.05 | 0.348 | -0.08 | -0.24 | -0.08 |
| 3 AU203 | 0.618 | -0.3 | -0.29 | 0.089 | 0.009 | 0.069 | 0.372 | -0.15 |
| 4 AU204 | 0.646 | -0.42 | -0.02 | 0.17 | 0.047 | 0.055 | -0.07 | 0.446 |
| 5 AU205 | 0.61 | 0.335 | -0.1 | -0.39 | 0.252 | -0.24 | -0.02 | -0.05 |
| 6 AU206 | 0.584 | -0.14 | -0.26 | -0.19 | -0.52 | 0.283 | 0.011 | 0.067 |
| 7 AU207 | 0.629 | -0.47 | 0.236 | -0.03 | -0 | -0.27 | 0.259 | 0.098 |
| 8 AU208 | 0.478 | 0.188 | -0.14 | 0.674 | -0.06 | -0.21 | 0.114 | 0.036 |
| 9 AU209 | 0.631 | -0.08 | -0.12 | 0.184 | -0.1 | 0.338 | -0.14 | -0.18 |
| 10 AU210 | 0.299 | 0.198 | 0.652 | 0.094 | -0.28 | -0.26 | 0.277 | -0.29 |
| 11 AU211 | 0.288 | 0.662 | 0.136 | -0.41 | 0.265 | -0.02 | 0.001 | -0.1 |
| 12 AU212 | 0.578 | -0.39 | 0.169 | -0.05 | -0.04 | -0.46 | -0.38 | 0.191 |
| 13 AU213 | 0.303 | 0.677 | 0.057 | -0.03 | -0.26 | -0.09 | -0.2 | 0.292 |
| 14 AU214 | 0.408 | -0.57 | -0.3 | -0.4 | 0.081 | 0.039 | 0.017 | -0.08 |
| 15 AU215 | 0.491 | 0.61 | -0.38 | 0.167 | -0.22 | -0.09 | -0.15 | -0.02 |
| 16 AU216 | 0.544 | 0.078 | 0.534 | -0.11 | -0.25 | 0.331 | -0.13 | 0.102 |
| 17 AU217 | 0.75 | 0.182 | -0.08 | 0.247 | 0.165 | 0.262 | -0.03 | -0.19 |
| 18 AU218 | 0.766 | -0.1 | 0.181 | 0.004 | -0.13 | -0.15 | 0.173 | -0.14 |
| 19 AU219 | 0.747 | 0.026 | -0 | 0.018 | 0.088 | 0.002 | -0.35 | -0.34 |
| 20 AU220 | 0.678 | 0.136 | 0.078 | -0.38 | -0.09 | 0.221 | 0.237 | 0.169 |
| 21 AU221 | 0.514 | 0.419 | -0.46 | -0.06 | 0.139 | -0.21 | 0.294 | 0.208 |
| Eigenvalues | 6.878 | 2.826 | 1.658 | 1.364 | 1.183 | 1.096 | 0.918 | 0.813 |
| % expl.Var. | 33 | 13 | 8 | 6 | 6 | 5 | 4 | 4 |
| cum% expl.Var. | 33 | 46 | 54 | 61 | 66 | 71 | 76 | 80 |

**Table A.2-3**

*Factor scores -- for factor 1*

| **Rank** | **Statement No.** | **Z-SCORES** |
|---|---|---|
| 1 | 41. Manufacturers need to innovate and produce more green products | 1.855 |
| 2 | 28. Meeting specifications is more important than providing a green product | 1.802 |
| 3 | 37. It will be nice to see more green products in our industry | 1.577 |
| 4 | 11. Government needs to enforce and create demand for green products to enable businesses to manufacture green products | 1.477 |
| 5 | 5. Customers mainly look at price when purchasing a product | 1.188 |
| 6 | 3. Safety features in a product is more important than green attributes | 1.1 |

**Table A.2-3 Factor scores – for factor 1 (continued)**

| Rank | Statement No. | Z-SCORES |
|---|---|---|
| 7 | 31. There will be demand for green products in the future | 1.086 |
| 8 | 26. Customers use our products in green processes like waste water treatment | 1.072 |
| 9 | 30. I would need training if I have to promote green attributes of our products | 1.03 |
| 10 | 34. I use internet and pdf catalogues instead of paper which is green | 0.993 |
| 11 | 7. Customers use our products in non-green process | 0.977 |
| 12 | 1. The client has to decide if they need green products | 0.847 |
| 13 | 17. Customers accept green products only if they get better price and delivery over standard product | 0.785 |
| 14 | 12. Cost savings is the main reason for green initiatives like saving water and electricity | 0.672 |
| 15 | 10. I hardly think about green behaviour in my job | 0.514 |
| 16 | 15. We need more focus on green marketing in our industry | 0.504 |
| 17 | 35. Green products are expensive | 0.428 |
| 18 | 29. Servicing and repairing a product is greener then buying a new product | 0.339 |
| 19 | 39. The amount of green products in the industry has decreased over time | 0.094 |
| 20 | 16. Green marketing is not relevant to our industry | -0.025 |
| 21 | 20. There are products in our business which are classified as green products | -0.133 |
| 22 | 9. We have several green initiatives within our business | -0.226 |
| 23 | 27. The products I sell are recyclable | -0.294 |
| 24 | 22. Most of our our products have green features in them | -0.299 |
| 25 | 19. We use green packaging for our products | -0.419 |
| 26 | 42. Products from competitors have more green features than our products | -0.518 |
| 27 | 18. We practise green initiatives only during the manufacturing stage | -0.615 |
| 28 | 24. I know the green attributes of our products | -0.639 |
| 29 | 4. Contractors show interest in green products | -0.671 |
| 30 | 2. It is cheaper to replace our product than repairing it, even if repairing is greener | -0.703 |
| 31 | 25. I participate and support the green initiatives we have in our business | -0.729 |
| 32 | 21. I have had success promoting green products | -0.86 |
| 33 | 40. Customers don't like the term green | -0.864 |
| 34 | 38. I look for greener ways to market our products | -0.885 |
| 35 | 6. Customers care about green behaviour and demand green products | -1.012 |

**Table A.2-3 Factor scores – for factor 1 (continued)**

| Rank | Statement No. | Z-SCORES |
|---|---|---|
| 36 | 33. I use green attributes of our products to differentiate from competitors if our price is high | -1.234 |
| 37 | 36. I don't care about green marketing | -1.254 |
| 38 | 8. There is an interest in green products among customers | -1.285 |
| 39 | 23. There are a lot of green products in our industry | -1.323 |
| 40 | 14. Green products come to my mind when talking to my customers | -1.361 |
| 41 | 32. I use green forms of transport to visit customers | -1.398 |
| 42 | 13. Green initiatives are common in our industry | -1.592 |

**Table A.2-4**

*Factor scores -- for factor 2*

| Rank | Statement No. | Z-SCORES |
|---|---|---|
| 1 | 31. There will be demand for green products in the future | 2.026 |
| 2 | 41. Manufacturers need to innovate and produce more green products | 1.814 |
| 3 | 37. It will be nice to see more green products in our industry | 1.728 |
| 4 | 26. Customers use our products in green processes like waste water treatment | 1.593 |
| 5 | 34. I use internet and pdf catalogues instead of paper which is green | 1.22 |
| 6 | 11. Government needs to enforce and create demand for green products to enable businesses to manufacture green products | 1.211 |
| 7 | 33. I use green attributes of our products to differentiate from competitors if our price is high | 1.114 |
| 8 | 7. Customers use our products in non-green process | 1.048 |
| 9 | 24. I know the green attributes of our products | 0.779 |
| 10 | 14. Green products come to my mind when talking to my customers | 0.753 |
| 11 | 38. I look for greener ways to market our products | 0.714 |
| 12 | 20. There are products in our business which are classified as green products | 0.583 |
| 13 | 8. There is an interest in green products among customers | 0.544 |
| 14 | 3. Safety features in a product is more important than green attributes | 0.523 |
| 15 | 25. I participate and support the green initiatives we have in our business | 0.498 |
| 16 | 29. Servicing and repairing a product is greener then buying a new product | 0.458 |
| 17 | 27. The products I sell are recyclable | 0.19 |

**Table A.2-4 Factor scores -- for factor 2 (continued)**

| Rank | Statement No. | Z-SCORES |
|---|---|---|
| 18 | 12. Cost savings is the main reason for green initiatives like saving water and electricity | 0.141 |
| 19 | 9. We have several green initiatives within our business | 0.081 |
| 20 | 19. We use green packaging for our products | 0.042 |
| 21 | 6. Customers care about green behaviour and demand green products | -0.009 |
| 22 | 21. I have had success promoting green products | -0.033 |
| 23 | 4. Contractors show interest in green products | -0.162 |
| 24 | 13. Green initiatives are common in our industry | -0.189 |
| 25 | 15. We need more focus on green marketing in our industry | -0.196 |
| 26 | 1. The client has to decide if they need green products | -0.254 |
| 27 | 5. Customers mainly look at price when purchasing a product | -0.422 |
| 28 | 23. There are a lot of green products in our industry | -0.449 |
| 29 | 17. Customers accept green products only if they get better price and delivery over standard product | -0.505 |
| 30 | 28. Meeting specifications is more important than providing a green product | -0.522 |
| 31 | 22. Most of our our products have green features in them | -0.712 |
| 32 | 40. Customers don't like the term green | -0.828 |
| 33 | 32. I use green forms of transport to visit customers | -0.87 |
| 34 | 35. Green products are expensive | -0.882 |
| 35 | 18. We practise green initiatives only during the manufacturing stage | -0.999 |
| 36 | 42. Products from competitors have more green features than our products | -1.055 |
| 37 | 30. I would need training if I have to promote green attributes of our products | -1.181 |
| 38 | 2. It is cheaper to replace our product than repairing it, even if repairing is greener | -1.325 |
| 39 | 16. Green marketing is not relevant to our industry | -1.36 |
| 40 | 39. The amount of green products in the industry has decreased over time | -1.483 |
| 41 | 36. I don't care about green marketing | -1.745 |
| 42 | 10. I hardly think about green behaviour in my job | -1.875 |

**Table A.2-5**

*Factor scores -- for factor 3*

| Rank | Statement No. | Z-SCORES |
|---|---|---|
| 1 | 7. Customers use our products in non-green process | 2.265 |
| 2 | 29. Servicing and repairing a product is greener then buying a new product | 1.72 |
| 3 | 3. Safety features in a product is more important than green attributes | 1.65 |
| 4 | 26. Customers use our products in green processes like waste water treatment | 1.405 |
| 5 | 24. I know the green attributes of our products | 1.363 |
| 6 | 20. There are products in our business which are classified as green products | 1.342 |
| 7 | 28. Meeting specifications is more important than providing a green product | 1.081 |
| 8 | 12. Cost savings is the main reason for green initiatives like saving water and electricity | 0.976 |
| 9 | 15. We need more focus on green marketing in our industry | 0.966 |
| 10 | 35. Green products are expensive | 0.797 |
| 11 | 40. Customers don't like the term green | 0.591 |
| 12 | 27. The products I sell are recyclable | 0.501 |
| 13 | 25. I participate and support the green initiatives we have in our business | 0.443 |
| 14 | 8. There is an interest in green products among customers | 0.443 |
| 15 | 33. I use green attributes of our products to differentiate from competitors if our price is high | 0.318 |
| 16 | 31. There will be demand for green products in the future | 0.255 |
| 17 | 34. I use internet and pdf catalogues instead of paper which is green | 0.244 |
| 18 | 17. Customers accept green products only if they get better price and delivery over standard product | 0.232 |
| 19 | 36. I don't care about green marketing | 0.149 |
| 20 | 5. Customers mainly look at price when purchasing a product | 0.1 |
| 21 | 6. Customers care about green behaviour and demand green products | 0.077 |
| 22 | 21. I have had success promoting green products | 0.028 |
| 23 | 37. It will be nice to see more green products in our industry | -0.124 |
| 24 | 2. It is cheaper to replace our product than repairing it, even if repairing is greener | -0.179 |
| 25 | 1. The client has to decide if they need green products | -0.211 |
| 26 | 42. Products from competitors have more green features than our products | -0.212 |
| 27 | 19. We use green packaging for our products | -0.238 |
| 28 | 16. Green marketing is not relevant to our industry | -0.443 |

**Table A.2-5 Factor scores -- for factor 3 (continued)**

| Rank | Statement No. | Z-SCORES |
|---|---|---|
| 29 | 41. Manufacturers need to innovate and produce more green products | -0.496 |
| 30 | 18. We practise green initiatives only during the manufacturing stage | -0.632 |
| 31 | 10. I hardly think about green behaviour in my job | -0.811 |
| 32 | 9. We have several green initiatives within our business | -0.856 |
| 33 | 38. I look for greener ways to market our products | -0.919 |
| 34 | 30. I would need training if I have to promote green attributes of our products | -0.932 |
| 35 | 14. Green products come to my mind when talking to my customers | -1.083 |
| 36 | 39. The amount of green products in the industry has decreased over time | -1.118 |
| 37 | 13. Green initiatives are common in our industry | -1.209 |
| 38 | 22. Most of our our products have green features in them | -1.269 |
| 39 | 32. I use green forms of transport to visit customers | -1.295 |
| 40 | 23. There are a lot of green products in our industry | -1.339 |
| 41 | 11. Government needs to enforce and create demand for green products to enable businesses to manufacture green products | -1.654 |
| 42 | 4. Contractors show interest in green products | -1.928 |

## Appendix A.3 PQ Method – Correlation matrix and factor score calculations – Q study A

**Table A.3-1**

*Correlation matrix between sorts*

| SORTS | IN301 | IN302 | IN303 | IN304 | IN305 | IN306 | IN307 | IN308 | IN309 | IN310 | IN311 | IN312 | IN313 | IN314 | IN315 | IN316 | IN317 | IN318 | IN319 | IN320 | IN321 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 100 | 21 | 15 | 22 | 9 | 14 | 15 | 6 | 28 | 26 | -2 | -14 | 8 | -2 | 1 | 15 | 7 | 15 | 4 | 41 | -2 |
| 2 | 21 | 100 | 22 | 23 | 50 | 45 | 35 | 4 | 32 | 56 | 32 | 29 | 5 | 31 | 8 | 39 | 38 | 14 | -1 | 28 | 25 |
| 3 | 15 | 22 | 100 | -5 | 28 | 7 | 36 | 20 | 10 | 51 | 16 | 35 | -1 | 26 | 10 | 38 | 12 | 31 | 11 | 8 | 15 |
| 4 | 22 | 23 | -5 | 100 | 22 | 31 | 20 | 11 | 34 | 28 | 22 | 1 | 18 | -5 | 32 | 10 | 2 | -20 | 7 | 27 | 16 |
| 5 | 9 | 50 | 28 | 22 | 100 | 51 | 64 | 11 | 60 | 54 | 14 | 35 | 21 | 32 | 28 | 34 | 43 | 7 | 37 | 46 | 24 |
| 6 | 14 | 45 | 7 | 31 | 51 | 100 | 24 | 5 | 35 | 47 | 34 | 7 | 13 | 36 | 31 | 36 | 33 | 7 | 30 | 30 | 35 |
| 7 | 15 | 35 | 36 | 20 | 64 | 24 | 100 | 13 | 50 | 48 | 20 | 2 | 12 | 27 | 27 | 45 | 24 | -3 | 28 | 47 | 34 |
| 8 | 6 | 4 | 20 | 11 | 11 | 5 | 13 | 100 | 24 | 27 | -27 | -2 | 2 | 14 | 0 | 6 | 15 | 23 | 22 | -10 | 7 |
| 9 | 28 | 32 | 10 | 34 | 60 | 35 | 50 | 24 | 100 | 41 | 4 | 6 | 15 | 32 | 35 | 39 | 48 | -18 | 40 | 24 | 5 |
| 10 | 26 | 56 | 51 | 28 | 54 | 47 | 48 | 27 | 41 | 100 | 12 | 34 | 29 | 45 | 22 | 44 | 40 | 9 | 34 | 50 | 35 |
| 11 | -2 | 32 | 16 | 22 | 14 | 34 | 20 | -27 | 4 | 12 | 100 | 10 | 24 | 5 | 31 | 36 | -4 | -1 | 1 | 23 | 1 |
| 12 | -14 | 29 | 35 | 1 | 35 | 7 | 2 | -2 | 6 | 34 | 10 | 100 | 15 | 23 | 11 | 31 | 14 | 11 | 18 | 5 | 1 |
| 13 | 8 | 5 | -1 | 18 | 21 | 13 | 12 | 2 | 15 | 29 | 24 | 15 | 100 | -2 | 21 | -8 | 6 | -6 | 19 | 34 | -22 |
| 14 | -2 | 31 | 26 | -5 | 32 | 36 | 27 | 14 | 32 | 45 | 5 | 23 | -2 | 100 | -5 | 55 | 25 | 0 | 29 | 23 | 39 |
| 15 | 1 | 8 | 10 | 32 | 28 | 31 | 27 | 0 | 35 | 22 | 31 | 11 | 21 | -5 | 100 | 25 | 10 | -32 | 28 | 8 | -15 |
| 16 | 15 | 39 | 38 | 10 | 34 | 36 | 45 | 6 | 39 | 44 | 36 | 31 | -8 | 55 | 25 | 100 | 4 | 6 | 26 | 20 | 28 |
| 17 | 7 | 38 | 12 | 2 | 43 | 33 | 24 | 15 | 48 | 40 | -4 | 14 | 6 | 25 | 10 | 4 | 100 | 6 | 24 | 15 | 30 |
| 18 | 15 | 14 | 31 | -20 | 7 | 7 | -3 | 23 | -18 | 9 | -1 | 11 | -6 | 0 | -32 | 6 | 6 | 100 | -2 | 11 | -6 |
| 19 | 4 | -1 | 11 | 7 | 37 | 30 | 28 | 22 | 40 | 34 | 1 | 18 | 19 | 29 | 28 | 26 | 24 | -2 | 100 | 6 | 4 |
| 20 | 41 | 28 | 8 | 27 | 46 | 30 | 47 | -10 | 24 | 50 | 23 | 5 | 34 | 23 | 8 | 20 | 15 | 11 | 6 | 100 | 13 |
| 21 | -2 | 25 | 15 | 16 | 24 | 35 | 34 | 7 | 5 | 35 | 1 | 1 | -22 | 39 | -15 | 28 | 30 | -6 | 4 | 13 | 100 |

**Table A.3-2**

*Un-rotated factor matrix*

| | Factors | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **SORTS** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** |
| 1 IN301 | 0.2839 | 0.0991 | 0.0129 | 0.6892 | -0.0244 | 0.3148 | -0.0073 | -0.0056 |
| 2 IN302 | 0.6458 | -0.114 | 0.2675 | 0.1051 | -0.1817 | -0.2338 | 0.3204 | -0.175 |
| 3 IN303 | 0.4419 | -0.4305 | 0.2815 | -0.0107 | 0.3557 | 0.3143 | 0.0591 | -0.2472 |
| 4 IN304 | 0.3681 | 0.5045 | -0.0539 | 0.1599 | -0.1903 | 0.1528 | 0.4096 | 0.0455 |
| 5 IN305 | 0.7945 | 0.0329 | -0.0942 | -0.0082 | 0.0697 | -0.2173 | -0.1064 | -0.2178 |
| 6 IN306 | 0.6513 | 0.1256 | 0.0378 | -0.0572 | -0.2436 | -0.1643 | 0.2762 | 0.4041 |
| 7 IN307 | 0.6982 | 0.0454 | -0.0501 | 0.0518 | -0.0869 | 0.2471 | -0.3228 | -0.3033 |
| 8 IN308 | 0.2097 | -0.3117 | -0.5159 | 0.1721 | 0.2985 | 0.2599 | 0.3429 | 0.1862 |
| 9 IN309 | 0.6729 | 0.2193 | -0.4508 | -0.0076 | 0.0219 | 0.0893 | -0.0271 | -0.184 |
| 10 IN310 | 0.8226 | -0.1323 | 0.0179 | 0.1276 | 0.1151 | -0.0526 | 0.0268 | 0.0453 |
| 11 IN311 | 0.3229 | 0.3657 | 0.6444 | -0.1845 | -0.0469 | 0.0533 | 0.134 | 0.1438 |
| 12 IN312 | 0.3441 | -0.2237 | 0.2896 | -0.3458 | 0.4384 | -0.3047 | 0.0774 | -0.1651 |
| 13 IN313 | 0.2489 | 0.4644 | 0.084 | 0.1799 | 0.46 | -0.3306 | -0.1965 | 0.2573 |
| 14 IN314 | 0.5529 | -0.3915 | -0.0325 | -0.2681 | -0.1742 | 0.0117 | -0.287 | 0.331 |
| 15 IN315 | 0.3734 | 0.585 | -0.0537 | -0.3504 | 0.2115 | 0.2142 | 0.1987 | -0.1328 |
| 16 IN316 | 0.6349 | -0.1778 | 0.2674 | -0.3099 | -0.0593 | 0.4286 | -0.0726 | 0.0946 |
| 17 IN317 | 0.5013 | -0.1578 | -0.3785 | 0.0428 | -0.0855 | -0.4898 | 0.1321 | -0.2099 |
| 18 IN318 | 0.0608 | -0.5389 | 0.2519 | 0.4318 | 0.3234 | -0.0417 | 0.1958 | 0.1865 |
| 19 IN319 | 0.4494 | 0.0524 | -0.4103 | -0.265 | 0.3376 | 0.0589 | -0.171 | 0.3536 |
| 20 IN320 | 0.5447 | 0.2174 | 0.2289 | 0.4972 | -0.0814 | -0.0967 | -0.407 | 0.067 |
| 21 IN321 | 0.3916 | -0.3545 | -0.0644 | -0.0916 | -0.6389 | -0.0308 | 0.0066 | 0.0702 |
| Eigenvalues | 5.5849 | 2.0619 | 1.6496 | 1.5544 | 1.4961 | 1.1795 | 1.0253 | 0.9307 |
| % expl.Var. | 27 | 10 | 8 | 7 | 7 | 6 | 5 | 4 |
| cum% expl.Var. | 27 | 36 | 44 | 52 | 59 | 64 | 69 | 74 |

**Table A.3-3**

*Factor scores - for factor 1*

| Rank | Statement | Z-SCORES |
|---|---|---|
| 1 | 8. There is an interest in green products among customers | 2.141 |
| 2 | 41. Manufacturers need to innovate and produce more green products | 1.595 |
| 3 | 3. Safety features in a product is more important than green attributes | 1.479 |
| 4 | 38. I look for greener ways to market our products | 1.334 |
| 5 | 34. I use internet and pdf catalogues instead of paper which is green | 1.159 |
| 6 | 4. Contractors show interest in green products | 1.139 |
| 7 | 12. Cost savings is the main reason for green initiatives like saving water and electricity | 1.087 |
| 8 | 20. There are products in our business which are classified as green products | 1.083 |
| 9 | 37. It will be nice to see more green products in our industry | 1.038 |
| 10 | 23. There are a lot of green products in our industry | 1.007 |
| 11 | 31. There will be demand for green products in the future | 0.931 |
| 12 | 35. Green products are expensive | 0.755 |
| 13 | 30. I would need training if I have to promote green attributes of our products | 0.618 |
| 14 | 28. Meeting specifications is more important than providing a green product | 0.589 |
| 15 | 26. Customers use our products in green processes like waste water treatment | 0.439 |
| 16 | 7. Customers use our products in non-green process | 0.42 |
| 17 | 27. The products I sell are recyclable | 0.208 |
| 18 | 22. Most of our our products have green features in them | 0.171 |
| 19 | 33. I use green attributes of our products to differentiate from competitors if our price is high | 0.131 |
| 20 | 21. I have had success promoting green products | 0.067 |
| 21 | 42. Products from competitors have more green features than our products | 0.038 |
| 22 | 5. Customers mainly look at price when purchasing a product | -0.078 |
| 23 | 9. We have several green initiatives within our business | -0.221 |
| 24 | 11. Government needs to enforce and create demand for green products to enable businesses to manufacture green products | -0.232 |
| 25 | 16. Green marketing is not relevant to our industry | -0.337 |
| 26 | 29. Servicing and repairing a product is greener then buying a new product | -0.425 |

**Table A.3-3 Factor scores – for factor 1 (continued)**

| Rank | Statement | Z-SCORES |
|---|---|---|
| 27 | 40. Customers don't like the term green | -0.46 |
| 28 | 15. We need more focus on green marketing in our industry | -0.465 |
| 29 | 32. I use green forms of transport to visit customers | -0.511 |
| 30 | 17. Customers accept green products only if they get better price and delivery over standard product | -0.564 |
| 31 | 13. Green initiatives are common in our industry | -0.816 |
| 32 | 25. I participate and support the green initiatives we have in our business | -0.854 |
| 33 | 24. I know the green attributes of our products | -0.875 |
| 34 | 1. The client has to decide if they need green products | -0.876 |
| 35 | 6. Customers care about green behaviour and demand green products | -0.899 |
| 36 | 19. We use green packaging for our products | -0.971 |
| 37 | 2. It is cheaper to replace our product than repairing it, even if repairing is greener | -1.004 |
| 38 | 10. I hardly think about green behaviour in my job | -1.104 |
| 39 | 18. We practise green initiatives only during the manufacturing stage | -1.262 |
| 40 | 39. The amount of green products in the industry has decreased over time | -1.396 |
| 41 | 36. I don't care about green marketing | -1.978 |
| 42 | 14. Green products come to my mind when talking to my customers | -2.102 |

**Table A.3-4**

*Factor scores – for factor 2*

| Rank | Statement | Z-SCORES |
|---|---|---|
| 1 | 5. Customers mainly look at price when purchasing a product | 1.688 |
| 2 | 37. It will be nice to see more green products in our industry | 1.66 |
| 3 | 31. There will be demand for green products in the future | 1.633 |
| 4 | 11. Government needs to enforce and create demand for green products to enable businesses to manufacture green products | 1.578 |
| 5 | 34. I use internet and pdf catalogues instead of paper which is green | 1.349 |
| 6 | 30. I would need training if I have to promote green attributes of our products | 1.227 |
| 7 | 38. I look for greener ways to market our products | 1.184 |
| 8 | 41. Manufacturers need to innovate and produce more green | 1.088 |

**Table A.3-4 Factor scores – for factor 2 (continued)**

| Rank | Statement | Z-SCORES |
|---|---|---|
| | products | |
| 9 | 15. We need more focus on green marketing in our industry | 1.045 |
| 10 | 1. The client has to decide if they need green products | 0.838 |
| 11 | 29. Servicing and repairing a product is greener then buying a new product | 0.791 |
| 12 | 8. There is an interest in green products among customers | 0.558 |
| 13 | 32. I use green forms of transport to visit customers | 0.545 |
| 14 | 16. Green marketing is not relevant to our industry | 0.494 |
| 15 | 35. Green products are expensive | 0.479 |
| 16 | 7. Customers use our products in non-green process | 0.455 |
| 17 | 17. Customers accept green products only if they get better price and delivery over standard product | 0.42 |
| 18 | 26. Customers use our products in green processes like waste water treatment | 0.394 |
| 19 | 28. Meeting specifications is more important than providing a green product | 0.195 |
| 20 | 3. Safety features in a product is more important than green attributes | -0.067 |
| 21 | 18. We practise green initiatives only during the manufacturing stage | -0.136 |
| 22 | 42. Products from competitors have more green features than our products | -0.157 |
| 23 | 33. I use green attributes of our products to differentiate from competitors if our price is high | -0.386 |
| 24 | 2. It is cheaper to replace our product than repairing it, even if repairing is greener | -0.388 |
| 25 | 21. I have had success promoting green products | -0.399 |
| 26 | 13. Green initiatives are common in our industry | -0.443 |
| 27 | 20. There are products in our business which are classified as green products | -0.45 |
| 28 | 14. Green products come to my mind when talking to my customers | -0.476 |
| 29 | 27. The products I sell are recyclable | -0.486 |
| 30 | 19. We use green packaging for our products | -0.492 |
| 31 | 10. I hardly think about green behaviour in my job | -0.635 |
| 32 | 6. Customers care about green behaviour and demand green products | -0.739 |
| 33 | 25. I participate and support the green initiatives we have in our business | -0.776 |
| 34 | 9. We have several green initiatives within our business | -0.839 |

**Table A.3-4 Factor scores – for factor 2 (continued)**

| Rank | Statement | Z-SCORES |
|---|---|---|
| 35 | 39. The amount of green products in the industry has decreased over time | -0.857 |
| 36 | 23. There are a lot of green products in our industry | -0.863 |
| 37 | 12. Cost savings is the main reason for green initiatives like saving water and electricity | -1.144 |
| 38 | 24. I know the green attributes of our products | -1.171 |
| 39 | 40. Customers don't like the term green | -1.276 |
| 40 | 22. Most of our our products have green features in them | -1.457 |
| 41 | 4. Contractors show interest in green products | -1.478 |
| 42 | 36. I don't care about green marketing | -2.509 |

**Table A.3-5**

*Factor scores – for factor 3*

| Rank | Statement | Z-SCORES |
|---|---|---|
| 1 | 3. Safety features in a product is more important than green attributes | 2.137 |
| 2 | 25. I participate and support the green initiatives we have in our business | 1.544 |
| 3 | 37. It will be nice to see more green products in our industry | 1.348 |
| 4 | 38. I look for greener ways to market our products | 1.273 |
| 5 | 1. The client has to decide if they need green products | 1.272 |
| 6 | 26. Customers use our products in green processes like waste water treatment | 1.199 |
| 7 | 24. I know the green attributes of our products | 1.197 |
| 8 | 7. Customers use our products in non-green process | 0.884 |
| 9 | 41. Manufacturers need to innovate and produce more green products | 0.878 |
| 10 | 6. Customers care about green behaviour and demand green products | 0.873 |
| 11 | 11. Government needs to enforce and create demand for green products to enable businesses to manufacture green products | 0.846 |
| 12 | 31. There will be demand for green products in the future | 0.784 |
| 13 | 5. Customers mainly look at price when purchasing a product | 0.654 |
| 14 | 12. Cost savings is the main reason for green initiatives like saving water and electricity | 0.548 |
| 15 | 21. I have had success promoting green products | 0.44 |
| 16 | 14. Green products come to my mind when talking to my customers | 0.293 |

**Table A.3-5 Factor scores – for factor 3 (continued)**

| Rank | Statement | Z-SCORES |
|---|---|---|
| 17 | 19. We use green packaging for our products | 0.282 |
| 18 | 34. I use internet and pdf catalogues instead of paper which is green | 0.255 |
| 19 | 30. I would need training if I have to promote green attributes of our products | 0.238 |
| 20 | 20. There are products in our business which are classified as green products | 0.121 |
| 21 | 13. Green initiatives are common in our industry | 0.118 |
| 22 | 23. There are a lot of green products in our industry | 0.001 |
| 23 | 33. I use green attributes of our products to differentiate from competitors if our price is high | -0.049 |
| 24 | 4. Contractors show interest in green products | -0.075 |
| 25 | 8. There is an interest in green products among customers | -0.112 |
| 26 | 29. Servicing and repairing a product is greener then buying a new product | -0.239 |
| 27 | 35. Green products are expensive | -0.287 |
| 28 | 22. Most of our our products have green features in them | -0.367 |
| 29 | 10. I hardly think about green behaviour in my job | -0.598 |
| 30 | 28. Meeting specifications is more important than providing a green product | -0.615 |
| 31 | 17. Customers accept green products only if they get better price and delivery over standard product | -0.661 |
| 32 | 18. We practise green initiatives only during the manufacturing stage | -0.744 |
| 33 | 32. I use green forms of transport to visit customers | -0.837 |
| 34 | 9. We have several green initiatives within our business | -1.004 |
| 35 | 2. It is cheaper to replace our product than repairing it, even if repairing is greener | -1.034 |
| 36 | 40. Customers don't like the term green | -1.166 |
| 37 | 36. I don't care about green marketing | -1.267 |
| 38 | 15. We need more focus on green marketing in our industry | -1.332 |
| 39 | 27. The products I sell are recyclable | -1.452 |
| 40 | 16. Green marketing is not relevant to our industry | -1.581 |
| 41 | 39. The amount of green products in the industry has decreased over time | -1.788 |
| 42 | 42. Products from competitors have more green features than our products | -1.975 |

**Table A.3-6**

*Factor scores – for factor 4*

| Rank | Statement | Z-SCORES |
|---|---|---|
| 1 | 34. I use internet and pdf catalogues instead of paper which is green | 2.087 |
| 2 | 24. I know the green attributes of our products | 1.703 |
| 3 | 17. Customers accept green products only if they get better price and delivery over standard product | 1.472 |
| 4 | 41. Manufacturers need to innovate and produce more green products | 1.281 |
| 5 | 5. Customers mainly look at price when purchasing a product | 1.105 |
| 6 | 9. We have several green initiatives within our business | 1.094 |
| 7 | 21. I have had success promoting green products | 1.079 |
| 8 | 38. I look for greener ways to market our products | 1.015 |
| 9 | 12. Cost savings is the main reason for green initiatives like saving water and electricity | 0.932 |
| 10 | 27. The products I sell are recyclable | 0.754 |
| 11 | 30. I would need training if I have to promote green attributes of our products | 0.684 |
| 12 | 28. Meeting specifications is more important than providing a green product | 0.621 |
| 13 | 19. We use green packaging for our products | 0.596 |
| 14 | 26. Customers use our products in green processes like waste water treatment | 0.57 |
| 15 | 13. Green initiatives are common in our industry | 0.566 |
| 16 | 15. We need more focus on green marketing in our industry | 0.551 |
| 17 | 37. It will be nice to see more green products in our industry | 0.541 |
| 18 | 29. Servicing and repairing a product is greener then buying a new product | 0.304 |
| 19 | 2. It is cheaper to replace our product than repairing it, even if repairing is greener | 0.211 |
| 20 | 11. Government needs to enforce and create demand for green products to enable businesses to manufacture green products | 0.109 |
| 21 | 23. There are a lot of green products in our industry | 0.098 |
| 22 | 35. Green products are expensive | 0.05 |
| 23 | 33. I use green attributes of our products to differentiate from competitors if our price is high | 0.006 |
| 24 | 22. Most of our our products have green features in them | -0.187 |

**Table A.3-6 Factor scores – for factor 4 (continued)**

| Rank | Statement | Z-SCORES |
|---|---|---|
| 25 | 25. I participate and support the green initiatives we have in our business | -0.2 |
| 26 | 32. I use green forms of transport to visit customers | -0.418 |
| 27 | 18. We practise green initiatives only during the manufacturing stage | -0.483 |
| 28 | 20. There are products in our business which are classified as green products | -0.553 |
| 29 | 14. Green products come to my mind when talking to my customers | -0.557 |
| 30 | 3. Safety features in a product is more important than green attributes | -0.565 |
| 31 | 6. Customers care about green behaviour and demand green products | -0.612 |
| 32 | 40. Customers don't like the term green | -0.876 |
| 33 | 31. There will be demand for green products in the future | -0.916 |
| 34 | 42. Products from competitors have more green features than our products | -0.93 |
| 35 | 4. Contractors show interest in green products | -1.02 |
| 36 | 16. Green marketing is not relevant to our industry | -1.03 |
| 37 | 7. Customers use our products in non-green process | -1.136 |
| 38 | 8. There is an interest in green products among customers | -1.139 |
| 39 | 10. I hardly think about green behaviour in my job | -1.304 |
| 40 | 36. I don't care about green marketing | -1.429 |
| 41 | 1. The client has to decide if they need green products | -1.66 |
| 42 | 39. The amount of green products in the industry has decreased over time | -2.414 |

## Appendix A.4 Second-order factor analysis

In section 5, a detailed comparison between the similarities and differences in the Australian and Indian attitudes was presented. Since this study uses the same Q-set for both the Australian and Indian marketers, an alternate way of comparing the various attitudes of marketers is through a second-order factor analysis (Brown,1980; Watts & Stenner, 2012). The second-order factor analysis uses the same analysis process explained in section 3.3.9. However, instead of using the statement ranks from individual participants, the statement ranks from the idealised Q-sorts for the three Australian and four Indian factors using the idealised Q-sorts shown in figures 4-1 to 4-7 is used. The result of the factor analysis, using a three factor solution is sown in table A.4-1.

**Table A.4-1**

*Second-order factor matrix with a X indicating a defining sort*

| QSORT | 1 | 2 | 3 |
|---|---|---|---|
| 1A (UI-A) | 0.0406 | 0.8714X | -0.0675 |
| 2A (HI-A) | 0.6293X | 0.374 | 0.531 |
| 3A (MI-A) | -0.4268 | 0.5235 | 0.6392X |
| 1B (HI-I) | 0.5354X | 0.4586 | 0.1208 |
| 2B (HIWL-I) | 0.2274 | 0.7581X | -0.3036 |
| 3B (MI-I) | 0.5192 | 0.2559 | 0.6075X |
| 4B (AL-I) | 0.6022X | 0.2656 | -0.0702 |
| % expl.Var. | 22 | 30 | 17 |

It can be observed from the factor analysis that that the HI-I and AL-I marketers from India are similar to the HI-A marketers from Australia. Similarly, the MI-I marketers are also similar to the MI-A marketers. Also, the HIWL-I marketers are similar to the UI-A marketers from Australia.

On the basis of the second-order factor analysis, the Australian and Indian marketers can be classified under three categories:

- Marketers who actively pursue green marketing (HI-A, HI-I and AL-I marketers)
- Marketers who occasionally pursue green marketing (MI-A and MI-I marketers) and
- Marketers who do not pursue green marketing (UI-A and HIWL-I marketers)

Although the broad classification of marketers in these three groups seems logical on the surface, it does not explain the subtle differences between marketers within the same group. For instance, even though the HIWL-I and UI-A marketers fit under the same factor because they do not pursue green marketer, the reason why these marketers do not pursue green marketing is fundamentally different to each other. The UI-A marketers did not pursue green marketing due to a lack of interest. The HIWL-I marketers on the other hand had a lot of interest, but did not have the right tools to purse green marketing. Therefore, it would not be fair to classify the HIWL-I marketers as having the same attitude as UI-A marketers. Similarly, even though the HI-A, HI-I and AL-I marketers positively load on the same factor, it would not be fair to classify the AL-I marketers as the same as HI-I or HI-A marketers. Such a grouping would not shed light on the significance of the AL-I marketers and how different they are compared to all other marketers in this study. It is due to such intricacies that the second-order factor analysis was not included in main body of this study, and instead of the comparing attitudes by factor analysis, the comparison was conducted using external and internal variables discussed in sections 5.3 and 5.4.